THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
The Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · The Railway Official Gazette

Published Every Friday
at
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "Trazette Parl., London"
Telephone No.: Whitehall 9233 (8 lines)

Annual subscription payable in advance and postage free
British Isles and Abroad.....£2 5s. 0d.
Single Copies.....One Shilling
Registered at the General Post Office. London, as a Newspaper

Vol. 79 No. 23 Friday, December 3, 1943

CONTENTS

	PAGE
Editorial Notes	549
Steps Towards Co-ordination	551
Freight Train Operations	551
U.S.A. Railway Operating	552
The Argentine Railway Committee	553
The New London Transport Organisation	553
Letters to the Editor	554
Publications Received	555
The Scrap Heap	556
Overseas Railway Affairs	557
Locomotive Fuel Economy	559
New Experimental Lightweight Train	560
Post-War Reconstruction	560
Personal	563
Transport Services and the War	566
Stock Market and Table	572

DIESEL RAILWAY TRACTION SUPPLEMENT

The December issue of The Railway Gazette *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready*

NOTICE TO SUBSCRIBERS

Consequent on the paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. The Railway Gazette *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 *a.m. till* 4.30 *p.m.*
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Restoring British Export Trade

MR. HARCOURT JOHNSTONE, Secretary of the Department of Overseas Trade, at a conference arranged by the London Liberal Party recently, dealt with the prospects of the United Kingdom's export trade after the war. He pointed out that we had lost a great part of our invisible exports, and that our income was likely to be some £200 millions less than it had been. Not only had we parted with great capital assets, but we had incurred a large volume of sterling indebtedness to other countries. Altogether we should have to add £350 millions to our pre-war export figures if we were to maintain our pre-war export standards. On the credit side, however, there would be an unexampled world demand for capital goods for reconstruction and development, and also for consumer goods. He warned his hearers that as a similar demand would exist in our home market, some measure of control over raw material and consumption in this country would have to be maintained for a time. Industrialisation overseas might mean the loss of old markets, but it also meant the gaining of new as a result of a higher standard of life.

Conservative Party Policy

Mr. Oliver Lyttelton, Minister of Production, recently outlined Conservative Party policy in the post-war years. He said that the aim of Conservatives was to create conditions of plenty and cheapness in which most of the wartime controls no longer would be necessary. They intended to do this by an expansionist —but not inflationary—financial policy. When thinking of repairing war losses, one fundamental fact had to be borne in mind: the almost unlimited power that modern science, and engineering, and business had given us to make good our wealth. Two or three fundamental inventions might replace in capital wealth all the money spent in this war. Full employment was partly a matter of establishing a full environment in which individual initiative was free to operate; that involved some measure of control and direction, but this need not be very far reaching. The State would have to exercise some influence over the timing and magnitude of new capital construction by local authorities, public utilities, and large companies. It was sometimes wrongly supposed that the world was getting further from the idea of private enterprise, and more towards an equal wage for everyone. On the contrary, all peoples were coming more to realise that it was necessary to reward individual services at widely varying rates if things were to be well done.

Savings After the War

An energetic voluntary savings organisation will continue to be indispensable after the war, more particularly during the period of transition from a war to a peace economy. Sir John Anderson, the Chancellor of the Exchequer, explained recently that the repair of war damage and the reconstruction of industry would have to be the first charge on our resources during that period, so that it would take time to provide any appreciable increase in the volume of goods available for private consumption. Inevitably that would mean continuing restraint in personal expenditure. Even when a more liberal scale of consumption could be permitted, capital investment in the development of the country would still require a large volume of savings of all kinds. The economic stability of the nation would rest largely on the success of the savings movement. The Chancellor said that large savings subscribed during the war had amounted to over £4,000,000,000, and small savings to £2,440,000,000. The present number of holders of Savings Certificates was 17,000,000, and the depositors in the Post Office and Trustee Savings Banks totalled 20,750,000. The enrolled members of the savings movement had increased in number from 1,650,000 before the war to about 13,500,000 at the present time.

L.N.E.R. Stockholders' Association

This association has been formed primarily for the purpose of securing for the benefit of L.N.E.R. stockholders an immediate revision of the financial provisions of the Railway Control Agreement of August, 1941, between the Government and the four main-line railway companies and the London Passenger Transport Board under which a fixed payment of £43,469,000 a year is made to the controlled undertakings; the Government retaining the balance of earnings. The proportion received by the L.N.E.R. out of this fixed payment together with certain miscellaneous receipts enabled 2⅛ per cent. to be paid in 1942 on the 4 per cent. second preference stock, but was insufficient to enable any dividend to be paid on the £42,360,925 of 5 per cent. preferred ordinary stock or on £35,923,810 deferred ordinary stock, neither of which stocks has received any dividend since 1930, when ½ per cent. was paid on the preferred ordinary. This company's standard revenue of £15,200,000 per annum

under the Railways Act, 1921, if allowed to be received out of its present earnings, would enable 4 per cent. to be paid on the deferred ordinary stock, and the Council of the Association considers that it ought to be allowed. No doubt the control agreement operates much more harshly against L.N.E.R. ordinary stockholders than against those of the three other main-line companies, all of whom have been receiving some return under it, but any alteration of the present control agreement in favour of one company would involve complicated re-adjustments with other companies, as has indeed been indicated by the chairmen of all the main-line railways at the annual meetings.

■■■▬

Central Argentine Moratorium Extension

In a circular to debenture stockholders and holders of bearer notes and interest certificates, the directors of the Central Argentine Railway Limited set out their reasons for proposing an extension of the present moratorium from December 31, 1943, to December 31, 1945. Meetings of the different classes of holders are convened for December 16 at Winchester House, E.C., to consider this proposal. Results of working for the years ended June 30, 1941, and 1942, were as follow:—

Year ended June 30	Gross receipts	Working expenses	Exchange differences	Net receipts
	£	£	£	£
1941	7,927,118	6,974,139	502,532	450,447
1942	8,464,050	7,591,357	506,651	366,042

Although the results of working for the year ended June 30, 1943, are not yet fully ascertained, the net receipts will show a higher figure than in the two preceding years; and it has been possible during the current year to make payments to the holders of the 4 per cent. debenture stocks of the arrears of interest in respect of the half-yearly periods ended December 31, 1940, June 30, 1941, and December 31, 1941. The interest on the 4 per cent. debenture stock is thus now in arrears as from January 1, 1942; no payments have been made on the other stocks affected by the moratorium since such moratorium was granted.

■■■▬

Result of Government Control

A somewhat piquant situation has arisen in the United States over the Toledo, Peoria & Western Railroad. This small belt line, which bypasses Chicago to the south, as recorded in *The Railway Gazette* of March 27 and May 29, 1942, was taken over by the Federal Government as a result of an employees' strike, and has been operated since by the Office of Defense Transportation. The cause of the strike was that the President of the T.P. & W.R., Mr. George P. McNear, Jnr., who was conducting the affairs of his line on an efficient and equitable basis, refused to conform to what he described as the "featherbed rules" of the men's unions, which he considered as particularly inapplicable to a system of such limited scope and specialised traffic as his own. After the property had been taken over, and the staff considerably increased as a result of bringing into operation the rules referred to, Mr. McNear pointed out that numbers of the men were actually worse off than under the rules and methods of payment that were in force during his presidency. It is remarkable that Mr. Joseph B. Eastman, Director of the O.D.T., has recently published a pamphlet entitled "Featherbed Rules, Railroad Manpower, and the T.P. & W." in which he reveals that under Government operation the rules for working the T.P. & W.R. have now been modified much on the lines of those previously in force. It is hardly surprising that Mr. McNear, who has never ceased to protest against the seizure, is now asking for the return of his line to private operation.

■■■▬

Wartime Passenger Travel

In the United States the "Is your journey really necessary?" wartime propaganda appears to a large extent to be falling on deaf ears. According to a recent survey by the Office of Defense Transportation, more than 29,000,000 passengers are using intercity train and bus services every month merely for the sake of social intercourse or for their own amusement. These 29,000,000 travellers constitute about 25 per cent. of the travelling public; Service men and women travelling independently, and not in drafts, make up 20 per cent.; and the remaining 55 per cent. are members of the public on essential business or going on holiday. That is to say, 80 per cent. of American passenger travel is civilian, and as it is estimated that in the United States passenger traffic as a whole is 260 per cent. above the peacetime level, this means, in effect, that civilian traffic is three times as much as it is normally. If this is correct, and the proportion of the unnecessary to what is considered necessary in civilian travel is as 25 to 55, it would mean that "social and pleasure" traffic in present war conditions in the United States is practically equal in extent to the whole of the peacetime passenger travel. It would be interesting to have comparative figures as to travel in Great Britain; on many long-distance trains we should guess, from experience, that 20 per cent. civilians and 80 per cent. Service personnel would be nearer the mark, so exactly reversing the American figures.

■■■▬

Magnetic Detection of Steel Defects

Detection of defects in steel by the use of a magnetic flux—that is, by passing a current of high amperage and low voltage through the metal—has been put to extensive and effective use in the Sperry equipment for locating transverse fissures in rails. The method, with certain modifications, is now being applied successfully to the search for defects in steel motion parts of locomotives. The principle used in such defect detection is that if a piece of iron or steel is magnetised, any crack or sharp edge will attract fine iron particles, which will cling to the affected part, or even reveal the presence of a flaw immediately beneath the surface. For this purpose a magnetic flux is passed directly through the metal, or through one or two turns of wire wrapped round it; a ferro-magnetic powder is then dusted over the surface of the metal, and is attracted to any surface crack, fully developed or in an incipient stage, or, as previously mentioned, to sub-surface defects. Steel parts must be thoroughly cleaned of grease, dirt, and rust, and be quite dry, before this form of electrical inspection becomes effective. At various locomotive works in the United States it is now being applied systematically to such parts as connecting and coupling rods, crossheads, pistons and piston-rods, valve-motion parts, driving wheels, axles, and crank-pins.

■■■▬

The Mono Rail

It is now doubtful whether any great interest could be revived in mono-rail transport as made possible by the use of gyroscopic stabilisers. From time to time the proposal is taken up and studied again but without there being any fresh ventures into the realms of practical experiment. A comprehensive theoretical study entitled "The Gyroscopic Stabilisation of Land Vehicles," by J. F. S. Ross, was published in 1933 and, very recently, Professor Inglis dealt with the same subject in his Thomas Hawksley Lecture before the Institution of Mechanical Engineers. The three practical pioneers in this field were L. Brennan, R. Scherl, and P. P. Schilovsky, the last of whom was still carrying out practical experiments until 20 years ago and possibly later. Brennan's mono-rail car, the best known of all, was described in our March 4, 1910, issue; Scherl's car was described in our pages on February 4 of the same year. The Brennan car carried 50 passengers and attained a speed of 22 m.p.h. However, the track had to occupy the same space and have the same load-carrying capacity as one with two rails, so that the mono-rail system did not seem to be worth developing beyond the experimental stage.

■■■▬

20-Coach Passenger Trains

Whereas in freight operation during the past decade the tendency has been to reduce the length of trains rather than to increase it, in the interests of smarter operation, and to build large numbers of 4-6-0 locomotives of mixed traffic types, such as the L.M.S.R. Class "5" 4-6-0s and the G.W.R. "Halls," "Granges," and "Manors," suitable for speedy handling of moderate loads, in passenger traffic the trend has been in the opposite direction. On the L.N.E.R. in particular, to cut to a minimum the long-distance passenger workings, trains of 20 corridor coaches are relatively common over the main line between Kings Cross and Edinburgh, and single-headed loads up to 25 bogies have been run. It is inevitable that such formations should give difficulty at terminals and at intermediate stops. On the route mentioned it is only at York, Darlington, Newcastle, and Edinburgh Waverley that the platforms can accommodate 20-coach formations; at Peterborough, Grantham, Doncaster, and elsewhere, double drawing up is required, and on arrival at Kings Cross the rear ends of these trains must be detached and moved to other platforms. Similarly on the S.R. the working of 16 and 17-coach loads has made it necessary to divide up expresses at Clapham Junction, and to work the second portions independently into Waterloo, with consequent delay. Duplication of trains throughout their journeys means duplication of motive power, engine crews, and guards, as well as more crowded line occupation. It is the difficult task of operating officers to decide which of the alternatives is the lesser evil, though shortage of motive power may decide it for them.

■■■▬

Locomotive Fuel Economy

To the general public, which, in the years before the war, was encouraged by intensive advertising to burn coal, coke, gas, and electricity without limit, fuel economy is a relatively new idea. Fuel-using industries, however, always have kept a check on the fuel bill; consequently, it would be wrong to suppose

that the railways had ever lost sight of this very considerable item in their working costs. Before the war, competition with road transport interests was so intense that already the most strenuous efforts were being made to improve locomotive efficiency by developing better designs and adopting better methods of utilisation. Government officers, newly appointed to promote fuel economy, might easily imagine that the railways were still waiting to be given useful hints and tips on coal saving but, as a matter of fact, the railways already know what to do; what is lacking today is not advice but a sufficiency of competent persons to maintain adequate standards of maintenance and supervision. From the paper summarised on page 559, which is by a railwayman, it can be seen that unceasing effort is being made in the face of labour and other difficulties to uphold the longstanding and much-cherished British railway tradition of safety and efficiency.

▪▪▪▬

Cinder Cutting in Locomotive Boilers

At extended intervals the problem of stay-head and tube-end cutting becomes prevalent regularly on certain railways; the incidence occurs when loads are increasing at a greater rate than locomotive capacity, so that for a time an appreciable proportion of the main-line motive power is being worked heavily in day-to-day operation. The phenomenon is experienced, also, with certain changes in locomotive design. Such erosion occasions no surprise when one considers the terrific speeds of the combustion gases at high-firing rates, ranging from about 150 to 200 m.p.h. at the firebox tubeplate, and up to 240-260 m.p.h. as a maximum above the end of the brick arch, with engines operating under high-draught conditions. Long ago, the expedient of driving steel ferrules into the back ends of brass and copper tubes was adopted to protect the first few inches of the tubes from abrasion, but in present-day practice, with steel tubes, one of the best ways of coping with tube-end cutting, where it is known that this is likely, is to increase the thickness of the tube or flue on the inside for 6 in. or so forward from the firebox tubeplate; the order of the increase is 2 w.g. No satisfactory solution to the abrasion of firebox side-stay heads has been put forward so far as we know, although we are aware that claims have been made for the success of a small steel bead welded to the plate, close to the stay head, and extending for an arc of about 120°.

▪▪▪▬

More 2-8-8-4 Type Locomotives

Although the operation in multiple of diesel-electric locomotives holds out the possibility of developing an enormous tractive effort for freight-train haulage, the American railways still find occasion to build or acquire large articulated steam locomotives. Not only since the commencement of the war, but in the years immediately preceding, numbers of these powerful units went into freight service. The ten latest 2-8-8-4 additions to the motive-power equipment of the Duluth, Missabe & Iron Range Railway (some reference to which was made in our September 3 issue) bring the total of this type on the system to eighteen. The tractive effort of each of 140,000 lb. is sufficient for handling 6,000-ton trains over a difficult route. From time to time it has appeared likely that engines of this description and magnitude would cease to be produced, and that examples in service would come to be considered interesting survivals of an almost extinct variety; but only wishful thinking could compel the belief that the diesel is anywhere near to eliminating its rival completely. Considered purely as a money-making investment, the relatively simple and cheap steam locomotive capable of burning soft coal may long continue to be unequalled for the work it has to do.

▪▪▪▬

A Railway Under the Tyne

A subject which has arisen many times over a long period of years, and which is still raised as a live topic by the Kearney Tube interests, is that of the construction of a railway underneath the River Tyne, which is not crossed by rail anywhere below Newcastle-upon-Tyne, with its famous high-level bridges. It was therefore with great interest that we discovered recently, in a work entitled "A Treatise on the Coal Trade," by Robert Edington, published as long ago as 1813, reference to a mineral railway then at work which ran right under the river. In describing Temple's Main Colliery, it says: "This colliery is of some extent, joining to Percy Main, at the centre of the river: has also a quantity of mine on the north of the Tyne, belonging to the corporation of Newcastle, bounden on a neck of land of Russell's Wall's End, on the south, and west of Bell and Brown's Wall's End on the north. These coals of the first quality, is conveyed on a rail-way, under the Tyne, and drawn to bank at Jarrow." We wonder whether any mineral railway line still passes beneath the river.

Steps Towards Co-ordination

THE co-ordination of transport is a matter which constantly exercises the minds of all those who are anxious to secure a more efficient and more economic user of all available vehicles in this country. It is, indeed, an essential pre-requisite in the evolution of a transport system which will give the maximum benefit to all parties involved. For many years the railways have striven to secure co-ordination of various forms of transport in this country, and their efforts towards this end continue. In certain other directions there have been developments recently which appear to have escaped general notice. One of the major difficulties in effecting co-ordination with other forms of transport has been the wide diversity and individuality of the units forming the other many branches in this country.

As was recorded in our November 26 issue, the liner section of the coastal shipping industry appears to be taking steps which will lead to a compact organisation for that branch of transport. Mr. Robert Kelso, Chairman & Managing Director of the General Steam Navigation Co. Ltd., told members of the Institution of Civil Engineers that the liner companies had every intention of continuing after the war the close co-operation which had been imposed on them from above during hostilities. He envisaged a unification of all points of contact in the liner coastal trade, including offices, staff, stevedoring, and so on. Mr. R. W. Sewill, Director of Associated Road Operators, said that it was hoped shortly to weld together the major road associations. This also would be a step which would assist in making possible a reasonable co-ordination of the subscribing members with other forms of transport.

The Minister of War Transport in his recent speech in the House of Lords on inland transport, pointed out that the co-ordination, and possible amalgamation, of Channel packet services is being examined by the railway companies, and he was no doubt referring to the same matter as Mr. Kelso when he said that certain of the coasting liner interests were pursuing schemes of consolidation. Moreover, the railway companies and the Dock & Harbour Authorities Association are in discussion as to measures of securing greater co-ordination between all dock and harbour undertakings. Towards this end the railway companies are now in process of becoming members of the Association.

It would seem, therefore, that in the last few months there have been definite steps made towards co-ordination of transport. There is still a long way to go before an efficient degree of co-ordination is achieved, but it is at least satisfactory that the movement is under way. In the road haulage industry, in particular, it cannot yet be claimed that anything approaching a reasonable co-ordination of units comprising it has been effected, but some progress is now being made towards an amalgamation of the main associations, and it is possible that the lessons of co-operation and organisation which the war has imposed, will not be lost when peace returns. So long as the road haulage industry consists of many thousands of undertakings, the difficulties of bringing about any permanent co-operation between it and the railways, and other forms of transport, will be almost insuperable. On the other hand, there can be no doubt that benefit will be derived from the more compact organisation of coastal shipping, and the closer association of docks and harbours.

▪▪▪▬

Freight Train Operations

AS the Allied armies mass themselves for the final assault and the tempo of the war quickens, there are certain inevitable reactions on industry and transport. Weapons of defence give way to those of offence and the note of urgency becomes more and more insistent with the approach of the gigantic operations which will herald the final phase of the war. Advancing armies require a ceaseless flow of all the many and varied munitions of war; new armies in the making must be equipped without delay; air armadas, warships, landing craft, and all the other accoutrements of modern warfare are required in ever-growing quantities. To all this must be added the demands for industrial equipment, fuel, and other commodities which will be required in connection with the rehabilitation of conquered territories. Thus, as the crescendo of armed conflict approaches, the greatest burden of all time descends on British industry, and the railways, as the vital arteries of the nation's transport system, are called on for the supreme effort of their long existence.

The events of the past four years have caused increasing emphasis to be placed on the transport of freight, and the efficiency of the freight train organisation has now become a matter of vital importance. Although the movement of troops in an ever-increasing number of special trains is the foremost

pre-occupation of the railways, the importance of the operation of the ordinary passenger train services, which have been carried on with marked efficiency under very difficult conditions, has necessarily had to yield place to the movement of freight traffic. The number of special trains run daily for the movement of Government stores and equipment substantially exceeds the number run for personnel, and is steadily increasing, and freight train traffic generally has increased to a record level. Some indication of the enormous tonnage now being carried by the British railways can be gathered from the fact that, whereas at the end of 1942 it was estimated that 3,000,000 loaded wagons were being forwarded every month, this has now increased by over 20 per cent. and in a recent week no fewer than 928,000 wagons were forwarded.

Fortunately for the nation the railways were at the peak of their efficiency when war broke out. This was not fortuitous, but arises from the fact that during the ten years immediately before the war the main-line companies, despite several years of low receipts occasioned by trade depression, pledged their faith in the future by the expenditure of many millions of pounds on new rolling stock, improved permanent way, marshalling yards, and the modernisation of stations and locomotive depots. Thus the railways were adequately equipped for dealing with a vastly increased peacetime traffic. But the advent of war, with the necessity for dispersing manufacturing centres as far as possible, the operation of convoys, and the vicissitudes of the war, speedily caused material alterations in the flow of traffic. This necessitated the provision of additional marshalling yards, running loops, and refuge sidings. Although the provision of these additional facilities has involved a great deal of work and expenditure, their extent is comparatively small in relation to the wide ramifications of the railway systems generally, which in any case provide many alternative routes.

The burden which the railways are now carrying is the greatest in their history, and present indications are that they have not yet reached the peak of the load which they are being required to carry. Efficient freight train organisation is, therefore, of the very highest importance and the principal factors in securing this may be summarised as under:—

(*a*) Adequate terminal facilities.
(*b*) A sufficiency of running loops, refuge sidings, and marshalling accommodation.
(*c*) Quick turn-round of wagons.
(*d*) Best possible utilisation of engine power.
(*e*) Adequate manpower in operating grades.
(*f*) An efficient and comprehensive system of traffic-operating control.

To place these factors in order of importance would be difficult for the reason that they are largely interdependent. The growing volume of traffic has made great demands on the available rolling stock and every effort is being made to achieve the quicker turn-round of wagons. Special campaigns have been launched with a view to impressing on traders and staff alike the supreme importance of securing the prompt release of loaded wagons, and strenuous efforts are being made at goods depots during weekends to unload wagons and so release them for traffic, in connection with which the assistance of volunteer labour has been invaluable. Close control is exercised on the disposal of empty wagons, and special trains of empty stock are run daily to the docks and collieries for immediate reloading.

It has been necessary also to introduce special arrangements for the control of engine power. The exigencies of war have restricted the construction of new locomotives, and the 20,000 engines at the disposal of the British railways have been called on to perform heavy and continuous service under extremely difficult conditions. It is by no means unusual for 100,000 miles to be run between general repairs and it speaks volumes for British locomotive design and construction that after four years of war the engine performance remains so good. To secure the best possible utilisation of motive power, locomotives have been exchanged between companies or loaned by one company to another, and enginemen have been similarly transferred. So far as manpower is concerned, as was pointed out in a recent article in *The Railway Gazette*, wartime traffic conditions have necessitated a considerable increase of staff in the operating grades, particularly footplate staff, goods guards, and shunters, and the loss of many experienced men to the Forces is naturally a severe handicap. The position has been met, as far as possible, by the transfer of staff from non-operating grades, but this is dependent on the recruitment of suitable women in replacement and in many cases such staff require a period of training. Strenuous efforts have been made to meet the demands for additional staff in the essential operating grades, but the requirements of the next few months will undoubtedly impose a severe strain upon the present establishment.

Finally, there remains the question of traffic-operating control. On the absolute efficiency of this important factor the smooth working of the record traffics now being handled by the British railways ultimately depends. It is, in fact, the keystone of the freight train organisation and it would be impossible to overstress the importance of the work which is being performed by the operating controls at the present time. On these controls devolves the responsibility of maintaining fluidity of movement, notwithstanding the heavy occupation of the lines; the best possible loading of trains; the reduction of light-engine miles to a minimum; the most efficient user of locomotives and trainmen; and the diversion of trains in cases of congestion or emergency. The traffic control system had been developed to a high standard of efficiency before the war, but further expansion has been necessary and many improvements have been effected during the last four years, particularly in the direction of providing more comprehensive telephone facilities, on which the satisfactory functioning of the controls is dependent.

The coming months will assuredly be a testing time for the freight train organisation of the British railways, but the record of the past four years and the experience already gained in handling major movements of traffic are sufficient grounds for confidence in the ability of rail transport to meet the most exacting demands likely to be imposed by future military operations.

U.S.A. Railway Operating

IN our issue of October 22 we commented upon the Interstate Commerce Commission's report on transport in the United States for the year ended October 31, 1942, and we also published an editorial article reviewing the work performed by the U.S.A. railways in wartime. We have now received a comparative statement of operating statistics for the Class 1 steam railways in the United States, all of which have revenues in excess of a million dollars. The statement is a stout volume of 63 pages, giving figures for the complete year 1942 and for 1941. The Bureau of Transport Economics & Statistics of the I.C.C. has designed the layout of the tables so as to make it easy to find the figures relating to any subject or to a particular railway. The statistics are grouped under ten titles:—

Revenues & expenses.
Income & balance sheet items.
Revenue traffic.
Freight commodity statistics.
Freight-train performance.
Passenger-train performance.
Yard-service performance.
Fuel & power.
Motive-power and car equipment.
Wage statistics.

Column numbers, running from 1 to 180, are assigned to the statistical items falling under each title. Revenue and expenses, for example, require 22 headings starting with 1 for "Average miles of road operated" and ending with 22 for "Operating ratio, per cent." Then a sign number, running from 1 to 150, is given to each region into which the railways are grouped for statistical purposes and to each individual railway. These numbers are repeated at both sides of every table and guide one to the figures for, say, the Union Pacific Railroad system. The index number for the U.P.R. is 127; the first entry for that railway is on page 12 and further details appear at intervals of 12 pages. The mass of figures would have been overwhelming if they had not been presented in this workmanlike manner.

We have mentioned the Union Pacific because the receipt of the photograph reproduced on page 413 of our October 22 number roused our curiosity about a line which is one of the main links between the Middle West and the Pacific coast. Our readers may also be interested in the notes below based on the 1942 records; the increases shown are over the 1941 figures. The Union Pacific runs from Chicago over the metals of the Chicago & North Western Railway to Council Bluffs, on the Missouri River opposite Omaha, where its own tracks begin and extend to Portland and Seattle—seaports as large as Hull with a valuable trade in grain, flour, and timber. There are offshoots from the main line to Kansas City, Denver near the snow-capped Rocky Mountains, Los Angeles among the orange groves and vineyards of California, and to Yellowstone National Park, Wyoming, with its magnificent geysers, lakes, and waterfalls. Together with its subsidiaries, the company operates 9,855 miles through a country of wide spaces where the scenery is distinctively American. Traffic is not dense. On an average day 9 freight and 7 passenger trains pass over each mile of line, whereas in the New England region as many as 18 freight and 32 passenger trains are recorded on the New York Central. Here it should be explained that, though the Union Pacific operates on double-track for more than 1,000 miles, it has many long stretches

of single line. Where the Union Pacific scores is in the length of haul; the average ton of freight is carried 596 miles; this compares with an average length of haul of 226 miles for all railways. Even the Santa Fe Railroad, with over 13,000 miles of line between Chicago and the Pacific Ocean had the shorter haul of 550 miles. The Passenger Department tells the same story. The Union Pacific carried over 4 million passengers, an increase of 80 per cent. Travellers in ordinary coaches were conveyed 500 miles on an average at a fare of one and a half cents a mile, and the occupants of parlour and sleeping cars went 824 miles for 2 cents a mile. The average journeys of the two classes of traveller on all lines were 196 and 546 miles respectively.

The Union Pacific earned a revenue of 353 million dollars, of which 282 millions represented freight charges. With operating expenses amounting to 219 millions, the operating ratio was reduced from 73 to 62 per cent. Revenue tons (45,568,000) and revenue ton-miles (27,185,000,000) both increased by about one third, and revenue per ton was more than 6 dollars, compared with an average receipt of something over 2 dollars for the whole of the railways. Of the freight revenue 52 per cent. came from manufactures, 19 per cent. from agricultural products, 11 per cent. from forest products, and only 8 per cent. from minerals. The corresponding percentages for all railways were 45, 12, 7, and 27, proving that the U.P.R. has an unusually large share of high-grade traffic. Its revenue of 1·038 cents per ton-mile compares with an all-line figure of 0·932 of a cent.

At the end of the year the Union Pacific had 1,355 locomotives in service and owned 50,785 freight wagons. Freight-train miles increased by about 5 per cent. with the result that the number worked in a train hour fell from 21·6 to 18·8. This slowing down in movement seems to be the weak spot in the operating machinery. On all lines there was the larger increase of 17 per cent. in freight-train miles but it was accompanied by merely a slight drop in speed from 16·5 to 15·8 m.p.h. The U.P.R. locomotives, however, were kept hard at work, for freight engines covered 118 miles in an average locomotive day and passenger engines 245 miles. These mileages compare with all-railway figures of 103 miles and 170 miles, respectively. There was remarkably little shunting done by U.P.R. train engines. The percentage of total freight-train hours spent in train shunting at wayside stations was 6·7, but as high as 17·2 for all lines. The probable explanation is that the U.P.R. has many long, through transits and also makes up its trains at dispatching points so discreetly as to cut down the time spent on shunting at intermediate stations.

Our scrutiny of the U.P.R. statistics shows that the railway is making a praiseworthy effort to handle wartime traffic efficiently and its hard work has been rewarded by an increase of no less than 115 per cent. in net income. Before the war the railway was not lacking in enterprise. Though primarily a freight carrier, it developed a centre for winter sports at Sun Valley, Idaho, and was one of the pioneers in the use of diesel streamline trains. Towards the end of 1937 the City of Los Angeles, hauled by a 5,400 h.p. diesel-electric locomotive, made quite a stir when exhibited at New York. With a sister train, the City of San Francisco, the streamliner was designed for regular service between Chicago and Los Angeles. In general style the two trains resemble the express run between the same cities by the Santa Fe route which was illustrated on page 414 of our October 22 issue. These high-speed trains were the answer made by the Western railways to the competition of airlines.

The Interstate Commerce Commission explains that the number of items in its comparative statement of operating statistics has been reduced from 451 to 180 to permit of earlier publication and to cut down the cost of compilation and printing. The curtailed tables contain a fund of information, as we have shown, and indeed tell as much about the American railways in wartime as we were allowed to know about our railways in the piping days of peace. Since the Government took control of our main lines, a veil of secrecy has been thrown over their working We have been able to lift a corner of the veil at odd times and have given sufficient details to confirm Lord Leathers's recent statement that "the war had made it clearer than ever before that the railways were a national asset which must be retained in full efficiency." We could not, however, have compiled from published documents a review of the work of one of our railways in the same thoroughgoing manner as we have been able to deal with a railway in the Central Western region of America. We hope that the Ministry of War Transport will issue before the end of the year a series of railway returns from 1939 to the close of 1942. The Minister has announced that the Government is considering the future of the railways and not only railway stockholders, but the section of the public which takes an intelligent interest in transport affairs, is entitled to know how railway property has been used during the past four years.

The Argentine Railway Committee

SOME further information relating to the composition and terms of reference of the committee which, as was recorded in our November 26 issue, has been appointed to study the difficulties of the foreign-owned Argentine railways, has been forthcoming in a statement issued by the three directors of British-owned Argentine railways at present in Buenos Aires. The statement refers to an overseas press article which has been reproduced in the local press, and which the directors state does not reflect the true state of affairs. According to *The Financial News* of November 27, the article to which reference was made appeared in its columns and voiced criticism by certain unofficial Argentine railway circles in London of the composition of the committee appointed by the Argentine Government. The statement issued by the directors says:

"The decree issued by the superior government on November 12 states textually: 'The magnitude of the problem presented to the executive power requires an integral solution that contemplates particularly the superior interests of the country and not only those of the railways mentioned, but also of all others coming within the national jurisdiction.' Therefore the interests of the other railways in the Argentine republic have not been left on one side, and further, it is incorrect that in Argentine railway circles the appointment of the commission has caused an unfavourable impression seeing that it is composed of seven gentlemen who duly represent the interests under consideration. It may also be stated that negotiations proceed normally, the constitution of the aforementioned committee being the first step towards obtaining an integral solution of the railway problem."

During last weekend cables were received in London revealing for the first time that the committee includes seven persons: Mr. J. M. Eddy, Mr. Harold C. Drayton, and Lord Forres, the three London directors, and Dr. L. P. O'Farrell, who is a director of the Buenos Ayres & Pacific Railway Co. Ltd., and Chairman of the local board representing all the British-owned lines in Argentine, as well as the three Argentine representatives previously named (Señor Arturo Noni, Director-General of the Railway Department of the Ministry of Public Works, Señor Eduardo Huergo, General Manager of the Argentine State Railways, and Dr. Juan Carlos Sola, Under-Secretary of the Ministry of Finance). The original announcement from Buenos Aires gave the names only of the three Argentine representatives. There can be no doubt that the composition of the committee as now revealed greatly adds to the hopes that may be entertained for a successful conclusion, and the terms of the decree suggest that a serious attempt is being made to grapple with the problem. The assurance that negotiations are proceeding normally will be welcomed.

The New London Transport Organisation

A REVISED scheme of organisation came into effect on Wednesday last (December 1) under which the Operating, Engineering, and Commercial Departments of the London Passenger Transport Board were brought into control of a General Manager, to which office Mr. T. E. Thomas has been appointed. The jurisdiction excludes the departments of the Secretary & Chief Legal Adviser, the Comptroller, and the Executive Officer for Staff & Staff Welfare. Apart from this, however, the new organisation resumes in many respects the arrangements which formerly existed under the late Mr. Frank Pick, in that operating, engineering, and commercial matters are brought under the direct control of one officer. There is the further difference, of course, that Mr. Thomas is not a Member of the Board. It may be recalled that Mr. Frank Pick, who was Vice-Chairman & Chief Executive Officer, decided not to seek re-appointment as a Member of the Board on the expiration of his seven-year term of office on May 17, 1940, when he retired from the Board's service.

Important changes were made in the Board's organisation, with effect from May 3, 1940, whereby the office of Chief Executive Officer was abolished, and the work of the Board was divided into seven departments, each under a Head of Department, reporting direct to the Board. It is three of these departments which now come under the charge of the General Manager; incidentally, this is a title which has not been used previously (without departmental qualification) in the organisation of London Transport. To facilitate the introduction of the revised scheme, Mr. V. A. M. Robertson, the Engineer-in-Chief, and Mr. Ivor Fraser, Principal Officer (Special Duties), and also acting Chief Commercial Manager, are retiring from the Board's service. Mr. Robertson has been appointed Chief Civil Engineer to the Southern Railway, with effect from February 1 next.

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Naming Locomotives

Movement Control, Takoradi,
West African Force. September 29

To the Editor of The Railway Gazette

Sir,—Regarding the correspondence on locomotive nomenclature in *The Railway Gazette* a while back, I have often wondered why the practice of naming engines has not been more widely followed abroad. In passing I would state that some classes here bear the names of governors of the colony and of coast strongholds dating from the days of the slave trade and "Guinea gold."

Only in Russia has the custom been recently revived by the bestowal of the names of prominent Soviet leaders and workers upon the latest types. Yet what a fillip would be given to continental travel—when that pastime eventually becomes practicable again—were other European countries to follow suit! Think of being hauled from Krakow to Lwow by *Sobieski* or *Jagellon* or speeding across the great plain of Hungary with *Hunyadi Janos* at the head! Where is the Englishman with a feeling for the past glories of Spain whose sense of romance would not be heightened by the sight of *El Cid* backing on to the train which is to take him on to sunny Seville? Our Hellenist would rejoice at completing his journey by the Athens part of the Orient Express with *Lord Byron* or even *Miltiades* to convey him through the Pass of Thermopylae and the groves of Olympus.

Yours faithfully,
GEOFFREY WILSON

Practical Application of Railway Statistics

"Petra," Belle Vue Road, Southbourne,
Bournemouth. November 23

To the Editor of The Railway Gazette

Sir,—I was much interested to read in your issue of November 12, the article on the scope and interpretation of railway statistics, having always taken a keen interest in this subject, particularly those having a bearing on the operation of freight trains, endeavouring to put them to practical use in my work as a Railway Operating Superintendent. Some years ago most useful statistical information relating to shunting and standing time of freight trains was circulated to Divisional Officers on the Great Western Railway each four-weekly period and I found these figures, especially in the case of standing time of really practical value to me. Although shunting is inevitable and cannot be eliminated, standing time by freight trains is pure waste and every endeavour should be made to reduce it to the absolute minimum. No figure ever compiled provided a better means of finding out quickly the basic causes of heavy delays to freight trains over any particular section of line than that relating to standing time.

It will be evident that a fall in standing time over any given section of line is reflected in an improvement in freight-train miles per engine-hour—a rise bringing about the opposite result, and in my opinion therefore standing time figures should be considered as of the utmost importance and should be readily available in view of the fact that they have a vital bearing upon operating results

Unfortunately, the preparation of shunting and standing statistics was abandoned a good many years ago and it is a matter of regret that these figures are not now available.

The shunting and standing figures were ascertained in the following manner. The guard of each freight train prepared a document known as the "Guards Statement for Engine Drivers" on which he recorded the shunting and standing time at every place at which his train called for traffic purposes or was detained for any reason. This statement was compiled in addition to his journal and at the conclusion of his journey the guard handed the statement to his driver who in turn attached it to his ticket. At the conclusion of each four-weekly period, the statistical office produced and circulated figures for total shunting and standing time at every place where freight trains stopped in each division and thus comparisons could be made, the black spots quickly identified, and an investigation made on the ground. A short cut to the root cause of delay was thus made available without the necessity of wading through innumerable guards' journals.

In some cases the attention thus focused on some particular signal box, station or yard, brought to light the fact that the place was over burdened and that a remedy had to be sought by rearranging train timings or loadings or cutting out certain trains.

In other cases, however, a fundamental defect in layout or capacity of a yard was found to be the cause, and the shunting and standing time figures could be made use of to build up in a convincing manner a case for expenditure in improving the yard facilities. The advantage of making figures representing standing time available to operating officers has evidently been underrated and it is hoped that the views expressed in these remarks may lead to the inclusion of this most vital figure in what statistical information is now compiled.

Yours faithfully,
TREVOR ROBERTS

Early Electric Traction

Essex House, Essex Street,
W.C.2. October 20

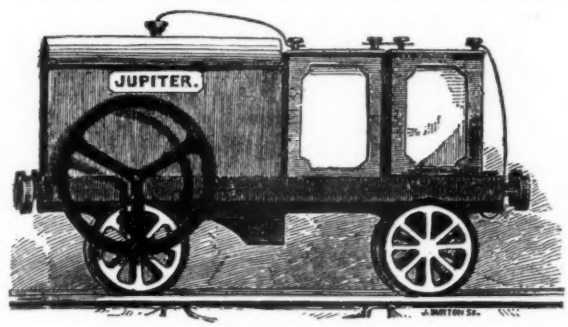
To the Editor of The Railway Gazette

Sir,—In Volume V (October, 1840, page 304) of "The Annals of Electricity, Magnetism, & Chemistry conducted by William Sturgeon" (1783-1850), discoverer of the soft-iron electro-magnet—the parent of the dynamo—who had the courage to say in a lecture in 1849 that he "quite anticipated that the electric light would supersede gas for public, whatever it might do for private, purposes") there appears under the title "Description of an Electro-Magnetic Locomotive Carriage" the following communication by Mr. Uriah Clarke:—

"Leicester, Sept. 15, 1840

"Mr. Sturgeon,

"Sir,—I take the liberty of forwarding to you a wood-engraving of my electro-magnetic carriage, which has been



Electro-magnetic locomotive carriage

working at intervals for the last two months on a circular railway at the Leicester Exhibition. This carriage when the battery is charged weighs 60 lb., and will run at a considerable speed for two hours and a half. I have lately increased its power so much that it has drawn a train of carriages weighing, together with itself, 112 lb. The battery by which this effect is produced consists of merely two pair of plates on Professor Daniell's sustaining principle; each pair of plates is charged with about one pint and a half of solution. The carriage is propelled by an arrangement of machinery on the reciprocating principle, which principle I claim to be the first inventor of, as far as regards the production of an efficient motive power. The engraving represents an exterior view of the carriage as it appears upon the railway. I do not describe the interior construction as I have adopted a particular mode of arrangement in the carriage which I have not yet made public."

Yours faithfully,
KENNETH BROWN

Glories of the Past

21, Briarfield Road, Tyseley,
Birmingham. November 17

To the Editor of The Railway Gazette

Sir,—Your editorial, "Glories of the Past," was indeed most interesting, and appears to have aroused not a little enthusiasm. It may be of interest to recall also that the days of the handsomely-painted engine are but another glory of the past, perhaps never again to be revived. Many may remember the Midland engines during Mr. Johnson's regime. Their beautifully finished paintwork, elaborate lining, and polished-brass beading never failed to excite universal interest and admiration, and indeed, neither did Mr. Deans 7 ft. 8 in. G.W.R. bogie Singles, with their shining copper-capped chimneys, polished brasswork, and handsome livery. At Crewe, on the other hand, none of these embellishments (with the exception of the polished-brass name-plates) was ever regarded as being entirely necessary, and it may be recalled that a minor change in the locomotive practice took place in 1873 when the original green livery of the L.N.W.R.

locomotives was changed to black by Mr. Webb. An amusing story is told with regard to this. One day at the Institute of Civil Engineers, Mr. Webb was being chaffed about the cheap appearance of the engines by the Locomotive Superintendent of a rival line, and Mr. Webb replied, that when the Shareholders of the L.N.W.R. were receiving a regular dividend of 10 per cent. he would be quite willing to cover the locomotives in gold leaf! On another occasion the black livery of L.N.W.R. locomotives again cropped up, and this time Mr. Webb replied, that the engines were running no less than 60,000,000 miles per annum which is equivalent to a journey round the world every 3 hr. 50 min., or 122 miles every minute or two miles every second, and for this reason no time could be spared to adorn them with elaborate paintwork.

Indeed, at that time it may be recalled that the compound engine, *Ionic*, and the Scotch racer, *Adriatic*, had each covered well over 86,000 miles since last being in the shops for repairs. It may be remembered that Mr. Webb's first compound express engine No. 66, *Experiment*, of 1881 ran for several weeks without being painted at all. A few details regarding the first trial run of this engine, when the great chief himself travelled on the engine footplate may be of interest. "The engine was built as an experiment, and so I called it *Experiment*," says Mr. Webb. "Before it was painted, I hooked it on at Crewe to assist a heavy express from Liverpool with 19 coaches. I tried it with steam shut off from the other engine for some distance along the Trent Valley. It ran without trouble from Crewe to London. On arrival at London it was still alright, and I had it turned round and hooked it to the morning Mail which it took to Holyhead. It ran well, and on arrival at Holyhead everything was alright. I then gave the men something to eat, turned the engine round, and hooked it to the Boat Express which it took to Crewe. The engine thus did 528 miles as a christening trip."

The *Experiment* was apparently satisfactory and a further 29 engines of the same class were built at Crewe between 1882 and 1884. The second engine of the class, No. 300 *Compound*, was tried on the L.S.W.R. in competition with one of Mr. Adams's 7 ft. 1 in. coupled express engines, and an illustrated article by the writer giving details of this remarkable locomotive trial appeared in *English Mechanics* for September 30, 1938. Mr. Webb, it may be interesting to recall, named the succeeding three engines of the "Experiment" class as follows, No. 300 *Compound*, because it was built on Mr. Webb's compound system, No. 301, *Economist*, because of the engine's economical coal consumption, and No. 302, *Velocipede*, because of the engine's great celerity.

These, and many other reminiscences too numerous to mention are Glories of the Past indeed, which will live for ever in the minds of the railway historian and those who worship at the shrine of the steam locomotive.

Yours faithfully,
A. RICHARDS

The "Fell" System on the Mont Cenis

The River Plate Trust, Loan & Agency Co. Ltd.,
Northgate House, 20/24, Moorgate,
London, E.C.2. November 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your issue of November 19 you give a very interesting article on the Fell system which was utilised to cross the Alps before the Mont Cenis Tunnel was pierced.

It may interest readers of your periodical to know that on the opening of the tunnel the whole of the Fell system section was taken up bodily and sold to the Estrada de Ferro Leopoldina, the former name of the present Leopoldina Railway. The material was used on the mountain section of the Organ Mountains for reaching the town of Friburgo. The grades are 8 per cent. with curves of 30 metres radius. After some time in use the Fell engines were dispensed with, and ordinary heavy six-wheel tank locomotives are now used. They weigh 45 tons and can take up only the same weight on the drawbar. The central rail, however, is kept in use for breaking purposes, as the difficulty is not so much taking the trains up as holding them on the down journey.

Yours sincerely,
NORMAN B. DICKSON

[The operation of the Friburgo Incline was described in our issue of June 14, 1935 (page 1150), by Mr. W. J. Hutchinson, then Resident Engineer of the Leopoldina Railway.—ED. *R.G.*]

Publications Received

Travel in England. By Thomas Burke. London: B. T. Batsford Limited, 15, North Audley Street, W.1. 8¾ in. × 5½ in. 154 pp. + 93 half-tone illustrations on separate plates. Price 10s. 6d. net.—The sub-title of this volume, namely, "From Pilgrim and Pack-Horse to Light Car and Plane," combined with the fame of its author as the writer of such volumes as "The Streets of London" and "English Night Life," give a fair indication of the treatment of the subject and the nature of the contents. In pleasant and well-informed style, he conducts the reader through his subject from early times to the present day, in a series of chapters which deal with prehistoric tracks, Roman roads, mediæval travel and travellers, Stuart and Georgian journeys, the great coaching days of the early 19th century, the rise of railways, the development of mechanical road transport, and the consequent revival of road travel with the development of motoring. It is an easy and readable volume, and the illustrations are particularly noteworthy, both for their selection and for their admirable reproduction. Unfortunately the sources are not always acknowledged. Nor, indeed, are the many and interesting quotations throughout the text always credited to their sources. However, the book does not purport to be a history, and its readability is in nowise impaired.

Railways form the subject of but one chapter, entitled "The Age of Steam," and this is clearly not written by a lover of railways. By this we do not wish to convey any suggestion of unfairness or partiality, but merely to indicate that Mr. Burke seems to find little romance or inspiration in railways, and regards them in the same strictly utilitarian way that most of us think of the water supply or the sewage system. He says that those who welcomed the railway as a factor in world peace did not foresee the armoured train, nor the rapid movement of aggressive armies. Thus, he concludes that the nearer nations are to one another in the means of communication, the more chances there are of war. In fact, this is an echo of the view that all scientific development should be banished until mankind is fitted to enjoy its fruits in peace. We cannot subscribe to such a view, and the wars of the Dark Ages do not lend support to it.

Be this as it may, we have found considerable pleasure in reading Mr. Burke's happy volume, and we recommend it cordially to our readers in the hopes that they will derive similar enjoyment.

The A.B.C. of Southern Electrics. Compiled by I. Allen, and obtainable from him at 225-7, Laleham Road, Staines. 6 in. × 4 in. 24 pp. Price 1s.—This is a new and fully illustrated booklet which describes the rolling stock in use on the electrified sections of the Southern Railway, and gives numerical lists for all the different kinds of train sets, both main-line and suburban. The last few pages are devoted to an interpretation of the headcodes. A sketch map is given of the routes worked by electric main-line stock. The information contained in this book has been checked by the Southern Railway.

Anthony & Antimacassar. By Mary and Rowland Emett. London: Faber & Faber Limited, 24, Russell Square, W.C.1. 7¼ in × 10 in. Illustrated. Price 6s. net.—"Anthony & Antimacassar" will not appeal to those in search of profound truths concerning railway engineering, operation, or finance; and it forms a contrast to the majority of publications reviewed in our columns. Nevertheless, the whimsical adventures of Anthony, the locomotive *Antimacassar*, and its "head-chief-driver," Mister Stuffingbox, cannot fail to please, particularly as they are conveyed to the reader with the help of delightful drawings, both in colour and in line, by Emett, of *Punch* fame. By courtesy of the proprietors of that journal, drawings by the artist dealing with railway subjects have been reproduced from time to time in *The Railway Gazette*.

Glossary of Terms used in Electrical Engineering. London: The British Standards Institution, 28, Victoria Street, S.W.1. 8½ in. × 5½ in. Price 1s. net.—Part 8 of this Glossary, which comprises the Index of Parts 1-7, has now been issued, and completes the work. It may be recalled that in present conditions it was not found practicable to publish the Glossary as a complete volume, as was done in the previous editions. The work has therefore been issued in several parts, each containing one or more sections, and Sections 1 to 10 were included in Parts 1-7, which have already been noticed in our columns at the time of their respective issues. The present publication completes British Standard No. 205, and enables a 186-page volume to be made up from the separate parts.

The Struggle of the Serbs. By K. St. Pavlowitch. London: The Standard Art Book Co. Ltd., 37, Bedford Square, W.C.1. 7¼ in. × 5 in. 88 pp., paper cover. Illustrated. Price 5s. net.—This is a striking and well-written brief survey of the struggle for independence of the Serbs from early times, and provides valuable "background" material for a consideration of the position of Serbia in relation to Jugoslavia, and of her post-war aspirations. A vivid account is given of the present Serbian resistance and of its importance in relation to the general picture of the war. The book is translated from the ·ench by Mr. Mark Clement.

The Scrap Heap

The sum of 100 guineas has been received by the Railway Benevolent Institution from the Music Hall Artistes' Railway Association, as a token of the latter's appreciation of the courtesy and consideration shown to its members when travelling.

* * *

Since the war started, 65,000 parcels have been sent by Great Western Railway employees, through the company's Comforts' Fund, to colleagues serving in the Forces, including 200 G.W.R. men who are prisoners-of-war.

* * *

Since the war began sugar beet has become a very important product of British agriculture, and it is now being harvested in large quantities. The Southern Railway is conveying much of this traffic, and during the 1942-43 season carried more than 130,000 tons in nearly 15,000 wagons.

* * *

Among members of the staff of the L.M.S.R. who have over 50 years' continuous service to their credit are Mr. J. Disley, carter, Liverpool, with 55 years, and Messrs. G. R. Jones, Sandon Dock, and J. Green, Birkenhead, with 54 years each. No less than 32 other employees in the L.M.S.R. Liverpool Goods Department have served continuously for 50 years each.

* * *

Rabbits and Trains

The great rabbit-proof barrier fence begun by the Government of Western Australia in 1901 is 1,139 miles long, without a break except for a few places where rabbit-proof gates are erected and where the railway runs through. It is said that, when the gates are opened to let trains pass, men have to be stationed with clubs to keep the rabbits from slipping through.

* * *

During the blackout on October 14, Porter James Nicholl, of the L.P.T.B., was standing, off duty, on Finchley Road Station when a Neasden train came in. As it left he heard some persons shouting: "Stop the train! there's a baby on the line!" A few moments later, when the train had cleared the platform, Porter Nicholl heard a scream and saw a woman, with a baby in her arms, lying on the track. He leaped to her rescue, and, taking the child from her, handed him to safety; as he went back for the woman, a train came round the bend. Amid shouts from onlookers endeavouring to stop the train, he calmly pushed her on to the platform, where passengers dragged her to safety. He jumped up alongside, and a second later the train went past. It transpired that she had stepped out of the train on the side away from the platform. Several witnesses have written to London Transport to commend Porter Nicholl's bravery.

* * *

Railway Mystery

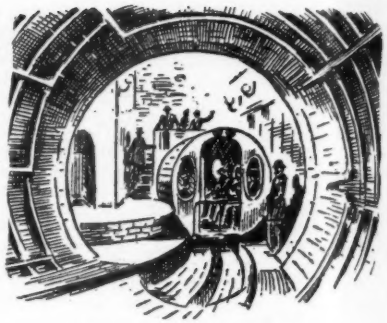
During the hearing of an action at Liverpool Assizes recently, it was mentioned that a steel "pin," six feet long and weighing 2 cwt., was despatched by rail from Keighley to Halsall, near Ormskirk, and had not been seen since. Widespread inquiries had failed to trace it.

"Somebody must have taken it for his bicycle," suggested Mr. Justice Cassels, amid "laughter in court."—*From the "Liverpool Daily Post."*

* * *

Tribute to Railwaymen

During the debate on the King's Address to Parliament, Mr. George Griffiths, Labour Member for Hemsworth, who seconded the motion for the Address, paid a tribute to the work which has been performed by railway employees. He said the railways of this country were the envy of the world, and that he thought not sufficient credit was given to those who manipulated our railways. Men over retiring age were still on the footplate working long hours in difficult conditions. In all there were some 656,498 railway workers, of which 105,703 were women. He added "Who is there in this House when he goes either to St. Pancras, Kings Cross, or Euston does not hear the cheery voice of the young lady shouting out 'Four o'clock train for Sheffield on No. 5 platform'? And when the Welshmen in the House get uneasy, look at the clock and rush away to Paddington for the five minutes to two or the five minutes to six train, she shouts 'Five minutes to six for Cardiff, Swansea, Newport,' etc."



The "Broadway Pneumatic Underground," New York, one block long, opened experimentally on February 26, 1870. It was driven with the aid of a shield, and was the first application in America of this method of tunnelling. The shield was recovered in 1912 when the present Broadway line was built

* * *

Answering Back

You CAN answer back the loud-speakers at railway stations. It was done recently in London.

An official's masculine voice blared out: "The next train on platform No. 3 is the main-line train for . . ." followed by an almost breathless list of at least fifteen stations.

In the pin-drop silence which followed, someone in the crowd shouted: "Thank you very much."

Instantly the loud-speaker retorted: "O.K., George. You've had it."—*From "The Daily Mirror."*

* * *

Universal Provider

In the refreshment room on the platform of a certain L.N.E.R. station we have noted the following articles on sale, in addition to the ubiquitous cups of tea, buns, and cake: cut bread, scones, safety pins, Waverley pen nibs, newspapers, books, postcards, string, aspirins, lung syrup, mineral waters, tincture of iodine, envelopes, zinc-oxide plaster, tobacco, Snowfire ointment, rubber erasers, red, blue, and blue-black ink, Beecham's powders, boracic lint, sandwich wrapping, vaseline, chocolate, boiled sweets, gummed labels, and tie-on labels.

* * *

Tailpiece

(Organisation of domestic fuel economy on British railways is very thorough. Allowance for open fires varies according to geographical latitude)

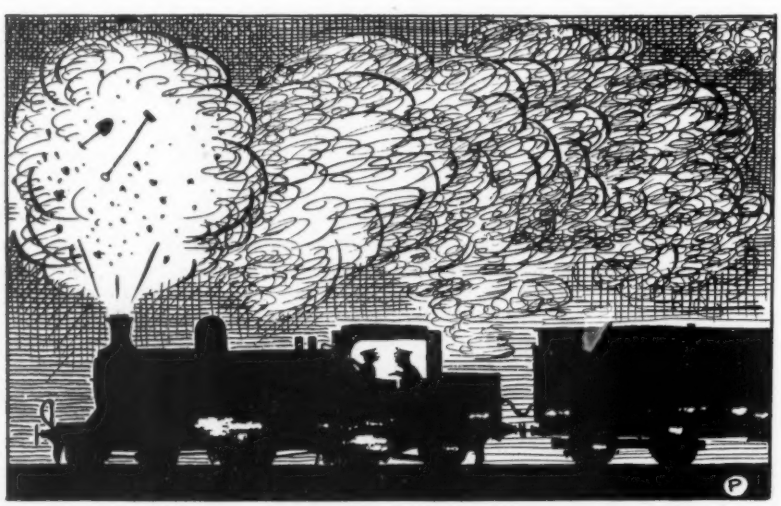
Fuel is gold, and locomotives get
A measured rate.
Domestically too a watch is set
On bulb and grate.

In station, workshop, office low or high,
The same writ runs.
Railway hotels have cut consumption by
Five thousand tons.

Records are checked, examined, and debated,
And meters viewed.
The coal for open fires is calculated.
By latitude.

Unchecked no light may burn, no flame may leap,
No smoke take wings,
While fifteen thousand fuel watchers keep
An eye on things.

E. C.



FUEL FLASH
"I SHALL write to Freddie Grisewood now—there go the ruddy fire irons"

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

UNITED STATES

Sleeper Renewals in 1942

Despite the restrictive effect of war conditions, both on obtaining materials and on labour, American railways succeeded in laying more sleepers in their tracks in 1942 than in 1941. Statistics from 70 railways show that, in 1942, 48,168,240 new, and 447,988 second-hand, sleepers, or a total of 48,616,240, were laid, compared with a total of 46,875,815 in 1941, an increase of 3·7 per cent. On 48 of the lines, creosoted, or otherwise-treated, sleepers were laid exclusively, and the number of lines on which only untreated sleepers were laid decreased from nine to five. On the remainder, the percentage of treated to untreated sleepers varied considerably; for all the railways together the percentage was 89·6 as compared with 87·5, and there was an increase of 5·4 per cent. in the total number of sleepers subjected to preservative treatment. The most extensive re-sleepering was done in the south-western region, where the new sleepers inserted to a mile increased from an average of 150 in 1941 to 187 in 1942; in the southern region there was an increase from 174 to 186, but elsewhere the figures showed either no change or a slight decline. The data quoted cover 332,202 track-miles.

Juvenile Sabotage on Railways

Some remarkable examples have been given by Mr. J. Edgar Hoover, Director of the Federal Board of Investigation in the United States, of acts of sabotage performed recently by boys (in some cases mere children) on American railways. It should be remembered in this connection that, as American tracks are for the most part unfenced, the opportunity for such activities is considerably larger than in Great Britain. For example, four boys, aged between 5 and 8 years, recently heaped stones, bricks, and mud on one rail of a track near Kansas City to a depth sufficient to derail a troop train. In Washington State, a boy cut air-brake hoses on four wagons, attempted to get fictitious orders issued to a train dispatcher, and wound up his one-man sabotage campaign by trying to block a railway track in the hope of derailing a munitions train. In Arizona, five boys, of ages between 13 and 16, placed sleepers and rocks on a line near Willcox, to slow down a westbound train "so that they could board it for a ride." In Ohio, an alert permanent-way gang averted a serious derailment when it discovered two spikes wedged between the rails at a switch—the work of three children of 9, 10, and 11 years. In Minnesota, three boys, aged between 15 and 17, placed oak planks on a track over which an ammunition train was about to pass, and disaster was averted only by the locomotive crushing the planks through and remaining on the line.

Locomotive Orders

The American locomotive-building programme, as it stood at midsummer of this year, shows the pronounced trend towards considerable size and tractive power. At July 1, authorisation had been given by the War Production Board for the building of 536 steam locomotives. Of these, 100 are to be of articulated types—25 4-6-6-4s for the Union Pacific Railway; 25 2-6-6-4s for the Norfolk & Western Railway; 20 2-8-8-4s for the Baltimore & Ohio Railroad; 20 4-8-8-2s for the Southern Pacific; and 10 for the Chesapeake & Ohio Railway of the unique 2-6-6-6 wheel arrangement of that system. Of the 436 non-articulated locomotives, all but 10 0-6-0 shunters are to be of 8-coupled or 10-coupled types. The largest class will consist of 150 2-10-4 freight locomotives of a new type, now in course of construction by the Pennsylvania Railroad at its Altoona shops, and there are 20 2-10-4s on order for the Atchison, Topeka & Santa Fe Railway System, and 10 for the Bessemer & Lake Erie Railroad.

The 4-8-4 continues to represent a very popular type of locomotive for fast passenger and freight service. Nine railways have such engines on order: the largest order is for 30 of a very powerful type for the Santa Fe system. Of 67 2-8-4 locomotives, 40 are for the Chesapeake & Ohio Railway; the New York Central System will take 25 out of 28 4-8-2s on order. The balance is made up of 4 2-8-2 locomotives and 38 0-8-0 shunters. It is interesting to note this continued vitality of steam in the face of strenuous competition from other forms of motive power.

ARGENTINA

Petroleum Production

According to the annual report of the National Oilfields Department for 1942, petroleum produced from State-owned wells during last year totalled 2,445,586 cu. metres, an increase over 1941 of 218,788 cu. metres. The distribution of output from State-owned wells during 1941 and 1942 is shown in the following table :—

Oilfield	1941 cu. metres	1942 cu. metres
Comodoro Rivadavia	1,452,733	1,556,599
Plaza Huincul	87,412	178,005
Salta	155,491	206,379
Mendoza	531,162	504,603
Total	2,226,798	2,445,586

Of the 1942 total, 375,593 cu. metres was obtained from wells opened during the year; the remaining 2,069,993 cu. metres represented output of previously-existing wells.

The national production of petroleum in Argentina during the six years 1937-42 has increased by 94 per cent., as shown in the table below :—

	cu. metres
1937	1,261,899
1938	1,430,599
1939	1,625,204
1940	1,983,252
1941	2,226,798
1942	2,445,596

Railway Pension Law

In reply to a number of petitions presented to the Government asking for the repeal, or, at any rate, the modification, of the reforms in the Railway Pension Law which have resulted in an all-round reduction in benefits, the Minister of Finance, Señor Jorge A. Santamarina, has issued a statement that this is impossible in view of the precarious situation of the fund. The Minister points out that the object of the reforms was to avert the bankruptcy which threatened to overtake the fund, as the result of the steady and increasing drain on its capital, which has been reduced by over 100,000,000 pesos during the last five years. The reforms in due course would enable the deficit gradually to be reduced, but had they not been adopted, the whole of the reserves would have been exhausted within the next five years. In view of all circumstances, which are involved, the Minister states that he is unable to recommend any changes in the provisions of the amended Law (No. 12,825) until such time as their results can be assessed.

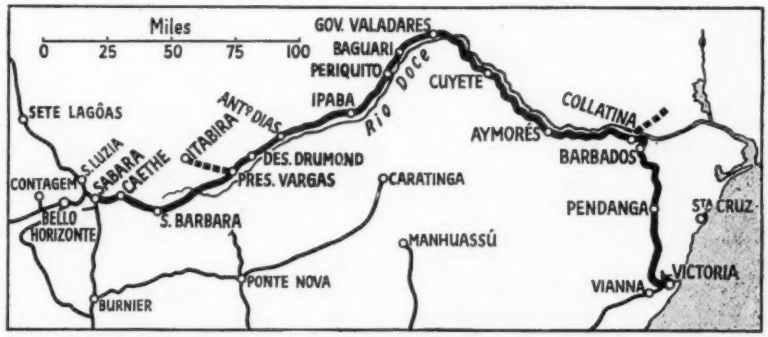
BRAZIL

Itabira Iron Ore Transport

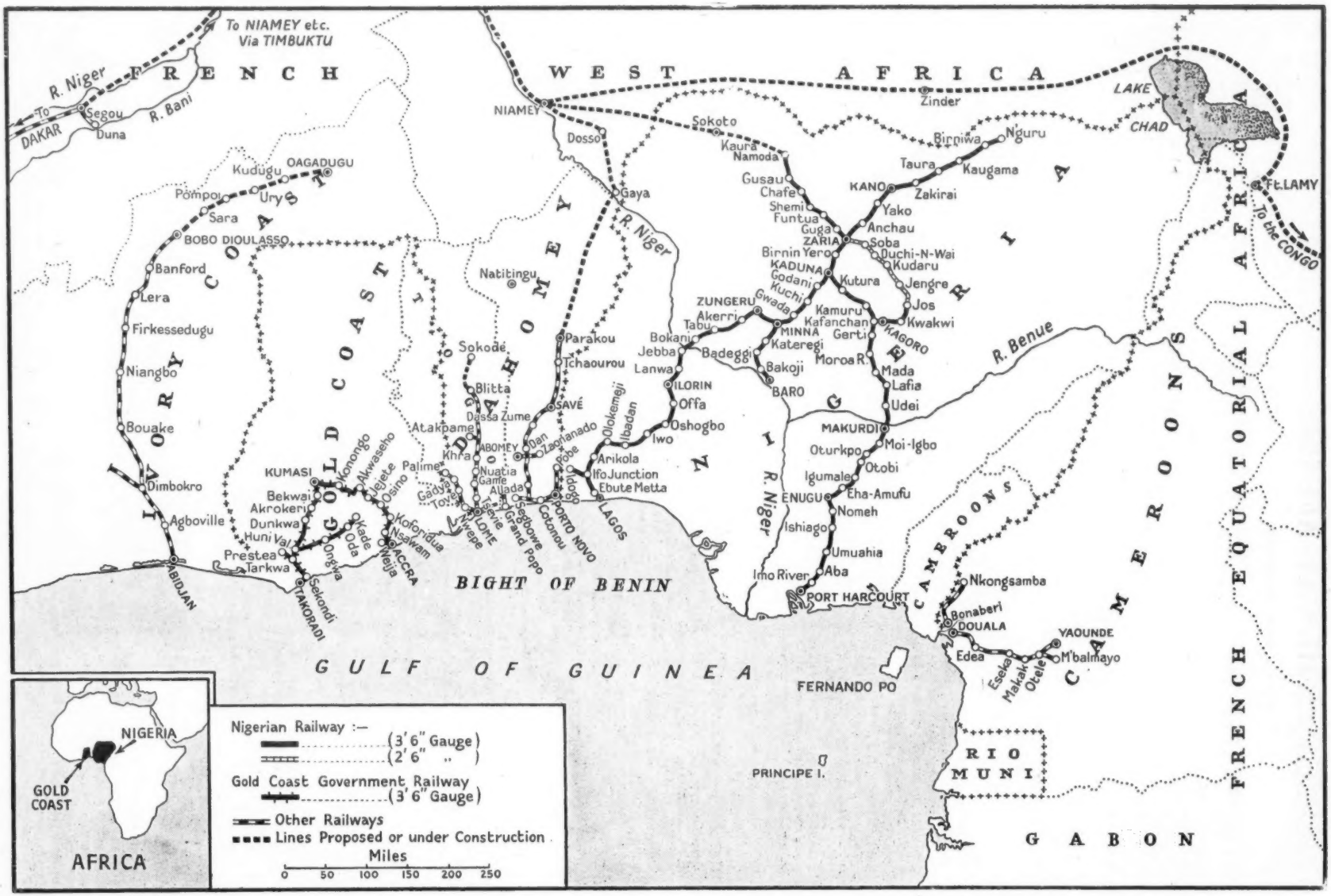
Recent messages from Washington indicate that considerable progress has been made, by agreement between the U.S.A., Great Britain, and Brazil, in opening up the rich iron ore deposits at Itabira. The successful exploitation of this area has always been subordinate to the question of transport, and the rehabilitation of the Victoria to Minas Railway in wartime conditions has been referred to in these columns on a number of occasions, of which the most recent was in our issue of June 11 (p. 595).

The contract for the reconstruction of this railway was awarded to the Cia. Vale do Rio Doce, a Brazilian company financed in part by credits from the Export-Import Bank (U.S.A.) which is engaged in developing the Itabira iron mines. Included in the work is the replacement of the present light rails with those of 70-lb. section.

Shortage of equipment in Brazil has resulted in the requisite excavations being undertaken by hand labour, but this has proved too slow and in October the contract was given to the Morrison-Knudsen Company of Bois, Idaho, to expedite the work.



Sketch map of the Victoria to Minas Railway, Brazil, which is undergoing extensive rehabilitation to meet wartime needs



The railways of West Africa. These were developed by European Colonial interests (British, French, and German) to link ports with the hinterland. Recent plans have been concerned with inland connections between the respective isolated systems, and the ambitious French Trans-Sahara Railway would make various of the lines virtually branches of a Trans-African system

Locomotive Fuel Economy

Pre-war measures to secure higher locomotive efficiency are among those now helping the railways to save coal

AS recorded in our October 29 issue, a fuel economy conference was held at the Central Library, Manchester, on October 20, when Mr. L. P. Parker, Locomotive Running Superintendent (Eastern Section), Southern Area, L.N.E.R., read a paper on "Locomotive Fuel Economy." He said that of the 200,000,000 tons of coal yearly produced in this country, some 16,000,000 tons were burned by the railways, nearly 14,000,000 by locomotives. In peacetime, locomotive coal had been some of the best in the country, and locomotives had been designed to take advantage of its characteristics. The amount of coal used by the railways depended on the volume of traffic, on the design and state of maintenance of locomotives, on the quality of fuel, on the skill of drivers and firemen, and lastly on the extent to which locomotives could be kept employed.

Before the war, much had been done to improve locomotive design; attention had been paid to increasing both power and efficiency. Improvements had included higher steam pressure, redesigned valve gears, enlarged steam and exhaust passages, and better front-end design. A full size locomotive testing plant to be jointly owned by the L.M.S.R. and L.N.E.R. had been in course of construction; test results had been obtained on a British locomotive by means of the test plant at Vitry in France. Improvements suggested by pre-war research were now embodied in about one-quarter of the locomotives in use, and were a feature of all new construction.

Maintenance had been rendered difficult by the loss to the Forces of so many skilled and semi-skilled men. However, excellent work was being done by men who had been upgraded; also by women, some of whom were now skilled engine fitters. The blackout hampered maintenance work, particularly when done in the open air or in open-end running sheds. Wear took place more rapidly because of the greater volume of work done by the engines, yet the time between trips available for repair had become shorter. In the circumstances, the maintenance staff deserved high praise for its work.

Since the war every effort had been made to use coal of the lower grades; for example, unscreened coal, household coal, ovoids, and briquettes. Enginemen had had to accustom themselves to coal from different collieries and districts, and that was not all. In the future they might be asked to use other substitute fuels; for example, opencast coal and coke. Opencast coal was being obtained from three sources, where the seams lay comparatively near the surface of the ground. Some of this coal had been found to give quite good results if screened before use. Consequently, the railways had agreed to accept nearly ¾ million tons a year when quantities of a suitable kind became available. Coke had been burned on locomotives a hundred years ago, but modern locomotives could not use it unmixed with coal. Because of its variability, furnace coke was unsatisfactory, but gas coke gave good results on shunting engines if mixed with coal in the proportion 25 parts of coke to 75 of coal by volume. A drawback of coke was that it needed more bunker space than coal, namely, 75 to 80 cu. ft. a ton, instead of 40 to 45 cu. ft. This necessitated loss of shunting time due to more frequent visits to the coaling stage. There was also some difficulty in ensuring a proper mixing of coke and coal; large coaling plants were liable to deliver an occasional bunkerful of one or the other instead of the intended mixture. Nevertheless, the railways had already contracted to take rather more than one-eighth of a million tons of gas coke yearly.

Briquettes and ovoids gave good results, but were in short supply. The railways had offered to take 30,000 tons a year when this quantity became available.

There had been a revival in the use of scrap wood for steam raising; one company alone was saving about 6,000 tons of coal a year in this way. Further possibilities in this direction were being investigated.

Economies in the use of locomotive power included the cutting of train services, the abolition of restaurant cars, and the curtailing of the period during which carriages were steam heated. The reduction of train heating alone last year was estimated to have saved 30,000 tons of coal. These particular economies had probably reached the limit, but it was probable that further benefits were still to be obtained through co-operation between the locomotive and operating departments; it might be possible to reduce idle engine time and prevent overloading.

The co-operation of footplate staff in the economy drive was essential. The 20,000 locomotives of the four main companies were worked by about 90,000 enginemen, most of whom were now working under many difficulties. First of all, there was the blackout; then, in spite of the great efforts of the maintenance staffs, engines were not in such good condition as before the war; finally, there had been, and there would be again, enemy action to counter. Enginemen were not expected to take cover in a raid, and the author was very glad of an opportunity to say in public what a magnificent show enginemen had given of faithfulness to duty when the *Blitz* had been at its height. The main body of the footplate staff still consisted of experienced men, but at the bottom end of the scale were many young recruits who had had to become acclimatized to the footplate after a very brief training. The art of firing a locomotive was taught at the running sheds, on locomotives by inspectors, and at Mutual Improvement Classes. However, experience was necessary, and the complete fireman could be produced only after this had been gained on many types of engines. Much could be learnt by young firemen from the drivers with whom they worked. General principles in locomotive firing were set out in handbooks and pamphlets published by the companies for the guidance of enginemen. Their propagation was also a function of the Mutual Improvement Class movement for which facilities were provided by the companies, although classes were managed by the enginemen themselves. It was thought that these classes at which there was an exchange of ideas between experienced and inexperienced men had anticipated the modern discussion group.

Young firemen were told that before starting a journey the fire had to be built up gradually and well burned through; that during the journey coal had to be added in small quantities at intervals frequent enough to maintain a thin, even fire without loss of boiler pressure on the one hand, or blowing off at the safety valves on the other. A thin fire, that is about 6 in. deep, enabled the fire to be kept hot. Coal would burn at about 800° F., but complete combustion necessitated a temperature of 2,500° F. The fireman's motto should be "Little and Often"; for express work, one company, after experimenting, had adopted the slogan "Fire every two minutes." At each firing, not more than 7 or 8 shovelsful should be supplied. Experiments had shown that a saving of at least 9 per cent. could be achieved by methodical as distinct from irregular firing. Suitable firing methods had also to be employed with stopping trains, goods trains, shunting engines, and so on.

The fireman was responsible for regulating the air through the dampers and the firehole door; enough had to be admitted to ensure complete combustion of carbon monoxide and volatile hydrocarbons, but excess had to be avoided, as this lowered the temperature of the fire. Yet again the fireman had to watch the water level, the steam pressure, and the smoke from the chimney. On commencing a journey, he had to have his fire and water level exactly right to ensure that he would have full pressure available for starting without causing the safety valves to blow beforehand. Towards the end of the journey, he had to let the fire burn down so that, at the finish, there would be a minimum of fuel on the grate.

Responsibility for getting the best results did not rest entirely with the fireman; driving methods had much to do with fuel economy. On older engines, drivers had been in the habit of giving the reversing gear a more or less fixed setting and varying locomotive power by means of the regulator. If an attempt were made to run with full regulator opening, trouble was experienced from hot axleboxes and hot big ends. Some drivers still needed to learn that with modern engines more use could be made of the reversing gear and that, generally, the best results could be obtained by leaving the regulator in the fully-open position. A comparison had been made between the older and the more modern ways of driving during a special trial with a new type of locomotive. On a trip of 230 miles, with a dozen stops and a load of about 300 tons, driving mainly on the regulator had led to a coal consumption of 39 lb. a mile. When the trip had been repeated and the driver had made more use of the reversing gear, the coal consumption had been found only a little more than 36 lb. a mile. On a third trip when the engine had been managed entirely by means of the reversing gear, a coal consumption of 33½ lb. a mile had been obtained.

The railway companies had appointed 46 locomotive inspectors whose sole duty was to promote fuel economy. They instructed the younger enginemen, advised those with more experience, and kept a lookout for mechanical defects which might adversely affect coal economy.

There was a long and animated discussion after Mr. Parker's paper. One speaker pointed out that faulty injectors and defective dampers were responsible for much fuel wastage; another speaker suggested that in very cold weather the use of fat instead of oil in wagon axleboxes increased train resistance to a point where coal consumption might be doubled.

The railways of West Africa. These were developed by European Colonial interests (British, French, and German) to tine ports with the hinterland. Recent plans have been concerned with inland connections between the respective isolated systems, and the ambitious French Trans-Sahara Railway would make various of the lines virtually branches of a Trans-African system

New Experimental Lightweight Train

A Spanish engineer has constructed a special high-speed lightweight train, using large pony trucks with independent wheels as coach underframes

REFERENCE has been made in our columns, January 16, 1942, page 105, and February 19 last, page 189, to the proposals made by Lt.-Colonel A. Goicoechea, now a member of the Government railway supervisory authority in Madrid, and formerly Locomotive Superintendent of the narrow-gauge La Robla Railways in Asturias, for the construction of high-speed lightweight trains of peculiar design, based on the employment of what is really a series of bissel or pony trucks, run trailing, with each attached to the one in front and having unconed wheels turning independently on the ends of fixed axles or tie-bars. The vehicle bodies are placed very low-down, in articulated form, and the vehicles are more than half covered and are placed exactly at the dividing points between the bodies. The total height of the train is only a little more than half of that of the rolling stock cutomarily employed in Spain on the 5 ft. 6 in. gauge.

A train, consisting of a four-wheel motor-driven haulage unit, or motor coach, and seven trailers carried on the Goicoechea special underframes, comprising a baggage-and-lavatory coach, and five ordinary, and one observation, saloon coaches, with seats for 75 persons each, has been running trials for some time, and was illustrated in a recent issue of our Swiss contemporary *Economie et Technique des Transports*. It is streamlined, and has a peculiarly-shaped rear end with a short platform. Except at slow speeds, the train is unable to move backwards, and loops or **Y** tracks are necessary at the terminal points to enable it to be reversed. The centre of gravity is extremely low.

Difficulty in obtaining materials has prevented the trial train from being built quite as the author intended, as aluminium ordinarily would have been used extensively to reduce the weight, and the suspension arrangements would have been more efficient. Nevertheless, the tare weight only amounts to about 100 kg. (220 lb.) a passenger seat, and might be cut down further if the designs could be carried out as intended; whereas in certain types of conventional main-line stock it amounts to as much as 2,000 kg. (4,410 lb.). As the weight on each wheel is so little, the inventor has proposed a new method of overcoming the break-of-gauge difficulty, of especial importance in Spain: he proposes to lift each wheel slightly by a jack and move it to the required position by a screw gear. In this way trains of the new type readily could pass the frontier. Colonel Goicoechea considers that the general introduction of his system of train construction would enable frequent fast services to be given, and, at the same time, particularly in view of the mountainous nature of much of the country, a large saving in operating and maintenance costs to be realised.

The new train is reported to have run very successfully on the main line of the former Madrid, Zaragoza & Alicante Railway between Madrid and Barcelona. In the course of a run from Madrid to Bilbao (where it had to be sent to the workshops for adjustments), a distance of some 500 km. (311 miles), a maximum speed of 130 km.p.h. (80¾ m.p.h.) was attained. The run from Valladolid to Miranda was made without a stop at an average speed of 100 km.p.h. (62 m.p.h.), and portions of this difficult route were covered at from 115 to 125 km.p.h. (72 to 78 m.p.h.).

With the return of normal conditions, an improved train probably will be constructed, and more extensive trials made in regular service. The provision of the means of turning the train might not be easy, although the use of independently-mounted wheels and the flexible nature of the complete make-up enables the turning loops and **Y**s to be of comparatively small size. Nevertheless the impossibility of reversing the trains must be counted as a serious operating disadvantage which must influence the future success of the invention.

Post-War Reconstruction

Points for present consideration by industrial organisations

(*From a correspondent*)

THE recent appointment of Lord Woolton as Minister of Reconstruction indicates that the Government contemplates a new and more co-ordinated approach to the problem of post-war reconstruction. It is generally admitted that so far the responsibility for tackling this problem has been divided among too many Ministries, with the consequence that the public has gained the impression that the difficulties ahead were not being tackled with sufficient drive or appreciation of the task as a whole. Whatever new proposals emerge, they are bound to affect directly or indirectly the future of industry in the post-war period, and, as such, industrialists throughout the country will give them close attention.

Taking most conceivable factors into account, one can envisage two stages in post-war reconstruction as being reasonably certain:—

Stage One: A period of inter-allied co-operation, with relief and lend-lease schemes predominant.

Stage Two: A more difficult period of international co-operation, when nations, nursed out of the initial economic aftermaths of war, grapple with the task of standing once again on their own feet and paying their way.

The period of international co-operation will undoubtedly include among its goals:—

The maximum development and use of raw materials.

The most equitable distribution of raw materials to ensure international, political, and economic stability.

The expansion of international trade, production, and consumption, with a view to providing and maintaining full employment.

The degree to which Governmental control or regulation of management, labour, prices, and profits will be maintained or extended must depend on the issue of the post-war political conflict between those who are in favour of 100 per cent. nationalisation. and those who pin their faith to the free functioning, for the good of the State, of a liberal and creative individualism within a system in which a measure of Government control or regulation is inevitable.

Excluding the political factor, which is an unknown element, industry should ask itself what specific steps it should take now in order to place itself in the most favourable position to make the best of the post-war world. The three objectives envisaged are: maximum production, maximum consumption, and improved distribution.

Under maximum production the following points merit attention:—

(1) Measures for directing production into the manufacture of products for which there is likely to be an increased demand after the war, or for which an increased demand can be developed.

(2) Measures for directing production out of products likely to be redundant after the war.

(3) Estimates of the competitive effect of wartime industrial developments in countries which have built up their secondary industries.

(4) Research with a view to improved efficiency in manufacture and the evolution of new products.

(5) Plant modernisation.

(6) Raw materials supply.

(7) Manpower supply—quantitative and qualitative—operatives, executives, management, higher management. (One of the major difficulties with which all industries of importance will be faced is this: where are the men coming from who will have to fill the higher managerial posts and who will have to be big enough to understand and to grapple with the complex international problems of the post-war world.)

(8) Labour relations. (One must accept the fact that the unions are now more than mere wage bargaining units, and that the development of Joint Production Committees has given Labour a new status.)

Under the headings of Maximum Consumption and Improved Distribution the following points, it is suggested, deserve consideration:—

(1) Analysis of pre-war markets at home and abroad.

(2) Estimate of post-war markets at home and abroad.

(3) Measures for increasing consumption by propaganda and improvements in marketing.

(4) More efficient distribution.

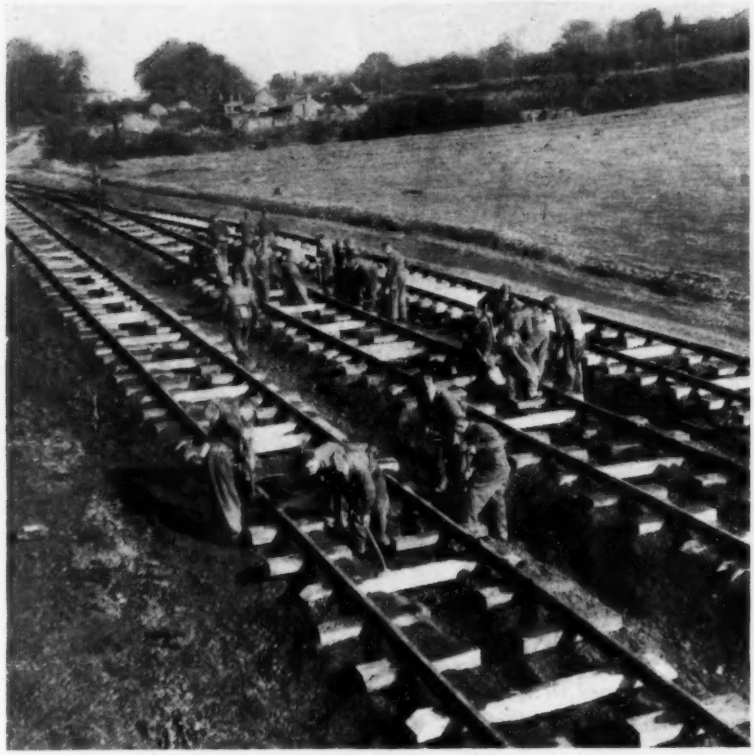
(5) Measures for expansion of export trade.

(6) Price-policy towards consumers.

Whatever may emerge from the distant horizon of Government deliberations, there can be little doubt that those industries will best insure their future which apply themselves at once on their own initiative to their individual problems, bearing in mind the broad principles outlined. In no other way is it likely that any blue prints for the future of practical value in the future will be evolved.

A U.S.A. Supply Depot in Great Britain

Rapid construction of concrete-sleepered track

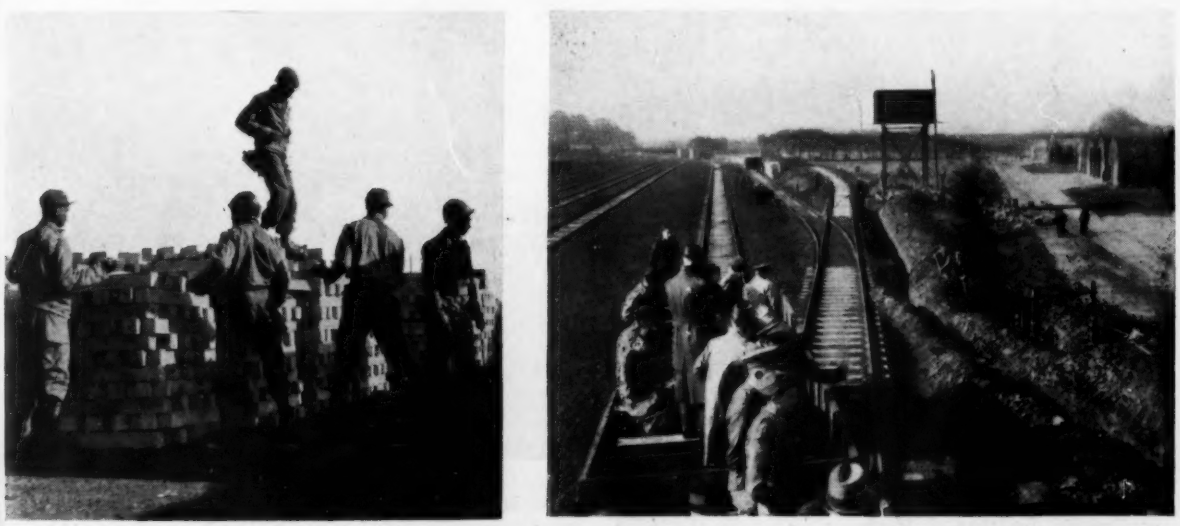


Track laying with concrete sleepers; note one in three transverse sleeper with intervening pairs of blocks

SOME details have recently been made available of the rapid construction of the General Supply Depot for U.S.A. Stores and Equipment in Great Britain, which has been described as one of the most efficient and rapidly-executed undertakings completed during the time that American Forces have been in this country. Within two days of beginning work, connection was made to the main-line railway; a line was laid across a cornfield to the site of the depot; and the first train load of materials was delivered. The time for completing the work was fixed originally at 15 weeks, but, despite the fact that three complete changes in the layout were made after the work had been begun, the task was finished within 10 weeks. Extensive use was made of American coloured troops, who were new to the type of work, but who functioned very efficiently under the direction of Sappers.

We have recently been afforded the opportunity of seeing a series of official War Office photographs of the work, and from these we have selected the three which are reproduced, showing track laying operations; Crown copyright is reserved. It will be noticed that concrete sleepers are used, excepting at points and crossings. On plain line, one in three is a transverse sleeper and the intervening two consist of pairs of concrete blocks.

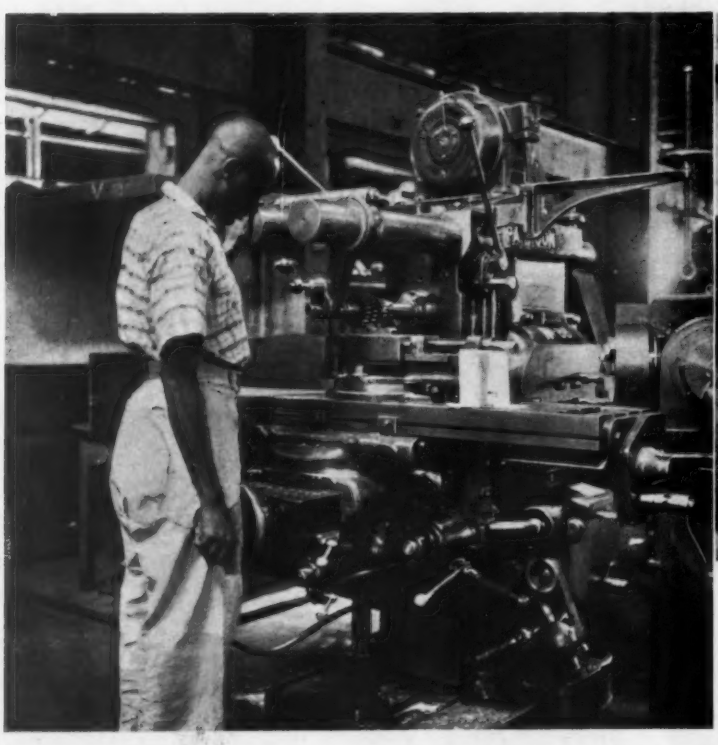
CONTROL OF MACHINE TOOLS.—Under the Control of Machine Tools (Measuring Instruments & Machines) (No. 1) Order, 1943 (S.R. & O. 1646), issued by the Minister of Supply with effect from December 1, it is illegal to acquire any new measuring instrument or machine of types specified in the schedule to the Order without a licence issued by the Minister, or to dispose of new apparatus of the types specified except to a licence-holder. Reference should be made to the Order (obtainable from H.M. Stationery Office), and application for a licence made in duplicate on Application Form 5C 1 to the Controller of Jigs, Tools & Gauges, 35, Old Queen Street, London, S.W.1, from whom copies of the form may be obtained. A licence is valid for one month from date of issue. Apparatus for export also requires a licence. The apparatuses specified in the schedule are of the more expensive types used in engineering workshops and test rooms, for measuring engineering components, or testing mechanical properties of engineering materials. The Ministry also announces that items A, B, and C in Direction No. 1 in the Control of Machine Tools No. 13 Order are to be eliminated. The practical effect is that all baling presses will be under Board of Trade control; the exemption given for can-making machinery is withdrawn, so that users will require a purchase certificate from Machine Tool Control, unless the machine tool is priced at £30 or less.



Left: American coloured soldiers stacking concrete sleepers. Right: Press correspondents, contractors, and Royal Engineer Officers making a tour of the depot by rail; note timber sleepers at the points

Kenya & Uganda Railways Workshops at Nairobi

Lorry bodies in course of construction in the workshops of the Kenya & Uganda Railways



Above: Mr. R. I. Kirkland, O.B.E., Assistant Chief Mechanical Engineer & Workshops Superintendent

Left: An African employee operating a horizontal milling machine

Much war material, including trench mortars and anti-tank mines, has been made in the Nairobi workshops of the Kenya & Uganda Railways & Harbours for use in the African campaigns. The mechanics employed are mostly Africans

(Illustrations by courtesy of "The Crown Colonist")

RAILWAY NEWS SECTION

PERSONAL

The directors of the Great Western Railway Company announce that the Rt. Hon. Lord Palmer, Deputy-Chairman of the company, will retire at the end of the year. The Hon. Sir Edward C. G. Cadogan, K.B.E., C.B., M.P., will succeed him as Deputy-Chairman of the company.

SOUTHERN RAILWAY CHIEF ENGINEER

The directors of the Southern Railway Company announce the following executive staff changes:—

Mr. G. Ellson, C.B.E., Chief Engineer, to retire on February 1, 1944. Mr. Ellson has held that position since 1927, with conspicuous ability and tireless energy, and the directors have appointed him Civil Engineering Consultant for two years from the date of his retirement.

Mr. V. A. M. Robertson, C.B.E., M.C., Engineer-in-Chief, L.P.T.B., to be Chief Civil Engineer, Southern Railway, as from February 1 next.

L.P.T.B. ORGANISATION

The London Passenger Transport Board announces that, as from December 1, the Operating, Engineering, and Commercial Departments have been brought under the control of Mr. T. E. Thomas, C.B.E., General Manager (Operation), who has been appointed to the new post of General Manager.

Mr. V. A. M. Robertson, C.B.E., M.C., Engineer-in-Chief, and Mr. Ivor Fraser, Principal Officer (Special Duties), who has been acting as Chief Commercial Manager, retire from the Board's service.

Mr. R. McDonald, Chief Commercial Manager, who has been seconded to the Air Ministry since April, 1941, will continue to have charge of the common-law and claims work of the Board.

Mr. B. H. Harbour has been appointed Commercial Manager, and will be responsible for public relations, publicity, fares and charges, traffic development and schedules, and commercial advertising.

Mr. J. H. F. Benford has been appointed Fares & Charges Officer, Department of the Commercial Manager.

(*See editorial article, page* 553.)

Mr. V. A. M. Robertson

Appointed Chief Civil Engineer, Southern Railway

Mr. T. E. Thomas

Appointed General Manager, L.P.T.B.

Mr. Vernon Alec Murray Robertson, C.B.E., M.C., M.Inst.C.E., M.I.Mech.E., M.Inst.T., Engineer-in-Chief, London Passenger Transport Board, who has resigned that position, and has been appointed Chief Civil Engineer, Southern Railway, was articled from 1909 to a consulting engineer to the L.N.W.R. In 1912 he became an assistant to the New Works Engineer, S.E.C.R. He joined the 14th London Regiment (London Scottish) in 1914, and a year later he was gazetted to the Royal Engineers. In May, 1919, he was demobilised with the rank of Major; he won the M.C. and Bar. In when he was demobilised with the rank of Major, he won the M.C. and Bar. In 1919 he rejoined the S.E.C.R., but in October of that year entered the service of the G.E.R., with which and the L.N.E.R. he remained until 1928, when he held the position of Divisional Engineer, Southern Division. He then became Civil Engineer to the Underground Railways, and retained that position on the formation of the L.P.T.B. On January 1, 1938, he was appointed Chief Engineer (Civil). His position as Engineer-in-Chief entailed the control of all engineering activities of the Board. Mr. Robertson is a Member of Council of the Institution of Civil Engineers, President of the Permanent Way Institution, a Member of Council of the Institute of Transport, Fellow of the Society of Engineers, and Member of the American Railway Engineering Association.

Mr. Theodore Eastaway Thomas, C.B.E., M.Inst.T., General Manager (Operation), London Passenger Transport Board, who has been appointed to the new post of General Manager, with control of the Operating, Engineering, and Commercial Departments, entered the drawing office of the London United Tramways in 1899, and later became Resident District Engineer. When the company was absorbed by the Underground group in 1910, he was transferred to publicity and traffic work for the group; and in 1913 he became Commercial Assistant dealing with fares and routes. In 1917 he was selected to be Development Superintendent of the London County Council Tramways, as the result of competition through a public advertisement. In 1925 Mr. Thomas was appointed Traffic Manager, and, in 1930, General Manager. On the formation of the London Passenger Transport Board in 1933, he was made General Manager, Tramways (Central, Southern & Eastern Areas), and in October of the same year he became General Manager of all London Trans-

Mr. H. J. Green

Chief Engineer (Civil), London Passenger Transport Board, 1940-43

[Photo] [Lafayette

Mr. P. Croom-Johnson

Appointed Chief Engineer (Civil), London Passenger Transport Board

Mr. A. B. B. Valentine

Appointed Chief Supplies Officer, London Passenger Transport Board

port tramways. In 1936 he was appointed General Manager (Road Transport), in control of the operation of buses, trams, and trolleybuses; and in March, 1939, he was made General Manager (Operation), in charge of the operation of all the Board's services. Mr. Thomas is a Past President of the Institute of Transport.

Mr. H. J. Green, O.B.E., M.C., M.Inst.C.E., M.I.Mech.E., M.Inst.T., who, as recorded in our November 26 issue, has relinquished his position as Chief Engineer (Civil), London Passenger Transport Board, on grounds of health, received his engineering training in America, and he served with the Grand Trunk Pacific Railway as Reconnaissance & Survey Engineer during preliminary work for the route through the Yellowhead Pass of the Rocky Mountains Immediately before the war of 1914-19 he was appointed Survey & Reconnaissance Engineer for the Pacific Great Eastern Railway, but returned to England shortly afterwards and joined the Royal Fusiliers. Later he was commissioned in the Royal Engineers, and in 1917 he was awarded the Military Cross. After the war he was engaged on harbour and dock construction, and later entered the service of the Metropolitan Railway as Assistant Engineer. After the death of Mr. E. A. Wilson, Mr. Green was appointed Acting Chief Civil Engineer. On the formation of the London Passenger Transport Board he was made Assistant Civil Engineer, and in January, 1938, became Assistant to the Chief Engineer. In February, 1939, he was appointed Assistant Chief Engineer (Civil), and, a year later, Deputy Chief Engineer (Civil). Mr. Green became Chief Engineer (Civil) in May, 1940.

Mr. P. Croom-Johnson, M.Inst.C.E., Chief Stores Superintendent, London Passenger Transport Board, who, as recorded in our November 26 issue, has been appointed Chief Engineer (Civil), was educated at Clifton College. In 1912 he was appointed Assistant Engineer in the Tramways & Highways Department of the City of Liverpool. He served as an officer in the Royal Garrison Artillery, and was mentioned in dispatches, during the war of 1914-19; on demobilisation in the latter year he returned to the City Engineer's Department, Liverpool. In 1923 he was appointed Resident Engineer for the Ministry of Transport on the Purfleet arterial road, and later was selected by the Ministry to take sole charge on the site of the structural alterations to the Menai suspension bridge. In 1924 he was appointed Assistant Permanent Way Engineer in the Tramways Department of

The late Mr. F. H. Willis

Secretary, Southern Railway Company, 1930-36

Mr. W. M. Hitchcock

Appointed District Goods Manager, Liverpool, G.W.R.

Mr. W. Lampitt

Appointed Assistant District Goods Manager, London, G.W.R.

the London County Council, and a year later became Permanent Way Engineer. After transfer to the London Passenger Transport Board in 1933, Mr. Croom-Johnson continued as Permanent Way Engineer (Trams) until he was appointed, in 1938, Technical Officer in the Department of the Chief Stores Superintendent. In 1939 he became Chief Stores Superintendent.

Mr. A. B. B. Valentine, M.Inst.T., Commercial Officer, London Passenger Transport Board, who, as recorded in our November 26 issue, has been appointed Chief Supplies Officer, was born in December, 1899, and was educated at Highgate School, and, after a few months in a cadet battalion in the latter half of 1918, at Worcester College, Oxford, of which he was a scholar; he took an honours degree in classics and philosophy in 1922. From then until 1928 he was Deputy-Editor in the Publications & Publicity Department of the British Commercial Gas Association. In the latter year he joined the Underground group, and was engaged for a short time on publicity work, until he became an assistant in the office of the late Mr. Frank Pick, then Managing Director. He was Mr. Pick's senior personal assistant when the London Passenger Transport Board was formed, and he remained in that position until 1936. From then until 1939 Mr. Valentine was Fares Officer of the Board; in September of the latter year he became Commercial Officer. He is a Member of Council of the Institute of Transport, and of its Executive Committee.

Mr. Francis Henry Willis, M.A., M.Inst.T., whose death we recorded last week, was Secretary to the Southern Railway Company from 1930 until his retirement on June 30, 1936. Mr. Willis was the second son of the late Judge Willis, K.C., and was educated at Haileybury College, and at Trinity Hall, Cambridge. He was called to the Bar at the Inner Temple in 1897; and two years later he entered the service of the former South Eastern & Chatham Railway, in the Goods Manager's Department, and dealt specially with rates and legal aspects of rates disputes. Under Sir Francis Dent, Mr. Willis was associated closely with several important cases. He appeared before the Russell Rea Commission in 1909, and was preparing a proof for submission to the Royal Commission on Railways of 1913 when the war terminated its sittings. He succeeded Mr. F. P. Igglesden as Goods Manager in 1920. On the formation of the Southern Railway, Mr. Willis became Indoor Commercial Manager, which position he held until appointed Secretary to the company in March, 1930. He had been connected closely with, and had given evidence at, the inquiry of the Rates Advisory Committee in 1920 into the principles governing the fixing of tolls, rates, and charges, and classification of merchandise traffic; and he had taken an active part in the protracted proceedings before the Rates Tribunal on the Revision of Rates & Charges which terminated in 1927. He was Chairman of the Goods Managers' Conference in 1923 and in 1929, and Chairman of the Superintendents' (Coaching) Conference in 1926. Mr. Willis was a foundation member of the Institute of Transport, on the Council of which he had served.

Mr. W. M. Hitchcock, Assistant District Goods Manager, London District, Great Western Railway, who, as recorded in our November 5 issue, has been appointed District Goods Manager, Liverpool, entered the service of the company in 1909 at Paddington Goods Station, and four years later was transferred to High Wycombe and subsequently to the District Goods Manager's Office, Reading. After a further period at High Wycombe he was transferred, in 1923, to the Chief Goods Manager's Office, where he was engaged in the Accounts and Parliamentary Sections successively. In 1928 he was appointed Goods Agent at Malvern, and six years later returned to headquarters, where he was associated with special duties concerning closer-working and pooling arrangements. Early in 1940 he became Clerk-in-Charge of the Working Department, Chief Goods Manager's Office. Mr. Hitchcock was appointed Assistant District Goods Manager, London District, in May, 1941.

Mr. Wilfred Lampitt, Outdoor Representative, Chief Goods Manager's Office (Working Department), Great Western Railway, who, as recorded in our November 5 issue, has been appointed Assistant District Goods Manager, London, joined the company at Paddington Goods Station in 1907, and subsequently gained experience at stations in the London and Worcester Districts. Mr. Lampitt served with the Royal Fusiliers from September, 1914, to March, 1919; he spent the next few years at stations in the London District, and a period in the London District Goods Manager's Office. In 1932 he was transferred to the Chief Goods Manager's Office, where he dealt with special-working matters, and in 1938 he was appointed Assistant to Goods Superintendent, Bristol. On the outbreak of war, Mr. Lampitt was lent to the Ministry of Food, and served as Port Food Movement Officer (South Western Area), and as Railway Food Movement Officer. In September, 1942, he was appointed Outdoor Representative, Chief Goods Manager's Office (Working Department). A detailed biography of Mr. Lampitt was published in our issue of July 2 last.

Colonel Eric Gore-Browne, D.S.O., who is Deputy-Chairman of the Southern Railway Company, and Chairman of Glyn, Mills & Company, has been appointed a Director of the Provident Mutual Life Assurance Association.

Mr. A. Endicott, M.B.E., F.S.I., Estate & Rating Surveyor, Southern Railway, has been appointed by the Minister of Health and the Secretary of State for Scotland a Member of the Inter-Departmental Committee set up to examine the whole question of rent control and advise what changes in the law are necessary.

G.W.R. Appointment

The Great Western Railway announces the following appointment :—

Mr. W. G. Salmon, Assistant to Docks Manager, Cardiff, to be Quay Superintendent, Weymouth, as from November 8.

Mr. R. P. Beddow has been appointed a Director of the Trent Motor Traction Co. Ltd., an associate of the British Electric Traction Co. Ltd.

We regret to record the death, on November 3, of Dr. H. A. Whitcombe. Although a medical man, he was a keen student of certain aspects of railway and locomotive history, and contributed a noteworthy paper to the Institution of Locomotive Engineers, on January 6, 1937, on the "History of the Steam Tram."

The Minister of Production announces that he has appointed Sir Charles Hambro, K.B.E., M.C., Chairman of the Great Western Railway Company, as United Kingdom Member of the Combined Raw Materials Board & Head of the British Raw Materials Mission in Washington. He succeeds Sir Clive Baillieu, K.B.E., C.M.G.

L.N.E.R. Appointments

The L.N.E.R. announces the following appointments:—

Mr. J. L. Meadowcroft, Acting Assistant to Hotels Superintendent, Southern Area, has been appointed Assistant Hotels Superintendent, Southern Area.

Mr. G. W. Stewart, General Assistant to the Superintendent (Western Section), Southern Area, has been appointed Staff & General Assistant to the Superintendent, Southern Area.

Mr. J. R. Fletcher, Acting District Locomotive Superintendent, Sunderland, has been appointed District Locomotive Superintendent, Burntisland.

Southern Railway Appointments

The Southern Railway announces that each of the following members of the Accountant's Department has been appointed a Special Assistant to the Accountant, with effect from November 1 :—

Messrs. R. W. Kemp, F. W. Case, and F. R. Stockdill.

We regret to record the death, on November 24, at the age of 63, of Mr. Frederick Hammerton Cowell, District Passenger Manager, Manchester, L.M.S.R. Mr. Cowell was educated at Rossall School, Cleveleys, and entered the service of the former Lancashire & Yorkshire Railway in 1903 as Traffic Staff Clerk at Manchester; in 1906 he was appointed Outdoor Assistant in the Chief Traffic Manager's Office there. He was transferred in 1908 as Assistant in the Passenger Superintendent's Office, Manchester; and in 1911 he was made District Passenger Superintendent, Halifax. In 1928 he returned to Manchester, as Divisional Passenger Commercial Superintendent, which post was re-designated District Passenger Manager in 1931. Mr. Cowell was a Director of Suttons Limited, and a member of the Todmorden Joint Standing Committee, the North Western Road Car Joint Standing Committee, and Ribble Motors Joint Standing Committee.

We regret to record the death, at the age of 86, of Mr. William Marriott, M.Inst. C.E., who retired in 1924 from the position of Engineer & Traffic Manager, Midland & Great Northern Joint Railway. He served his pupilage with Ransomes & Rapier, by which firm he was employed afterwards, and with a civil engineer in London. He then was engaged as engineer and contractor's agent on the construction of various sections of the Yarmouth & North Norfolk Railway and the Yarmouth Union Railway. In 1883 he was appointed Engineer to the Eastern & Midlands Railway, and, in 1884, became Locomotive Superintendent. He was responsible for the construction of the Lynn loop line in 1885, and of the Cromer line in 1887, although at the same time he continued private practice. It was during this period that the late Mr. Charles S. Lake, for many years a member of the editorial staff of *The Railway Gazette*, served a pupilage under him at Melton Constable. Mr. Marriott transferred to the service of the Midland & Great Northern Joint Railway in 1893, and in 1919 was appointed Engineer & Traffic Manager.

TRANSPORT SERVICES AND THE WAR—218

Christmas Parcels

Members of the public are requested to refrain as far as possible from despatching parcels by railway this Christmas. Because of very heavy war traffics and the limited staff and cartage teams available, there may be delays in delivery. Parcels despatched after Saturday, December 18, may not be delivered until after Christmas.

Christmas Holiday Leave Restrictions

Civil Servants are not to be granted leave between December 23 and 28 if they desire to travel by train. Evacuated Civil Servants working in the provinces will not be permitted to use travel passes during this period.

No leave or short passes will be permitted throughout the British Army at home for any distances exceeding 20 miles, to begin during the period from December 23 to December 28. No outward privilege leave by rail will be granted during the same period, and no inward travel, returning to units, or privilege leave on December 24, 25, 27, and 28. No restriction is placed on inward travel on December 26.

Aerodrome Traffic at L.N.E.R. Country Stations

New aerodromes completed, and others under construction, are demanding the rail transport of enormous quantities of building materials, petrol, and stores of all kinds. A dozen small country stations on the L.N.E.R. system, which in the 6 months ended June, 1940, handled between them a mere 81,233 tons of this kind of traffic, have dealt with no less than 335,225 tons during the corresponding period in 1943, an increase of over a quarter of a million tons. At none of these stations was the percentage increase less than 104, and two of them recorded jumps of 1,056 per cent. and 2,444 per cent. To avoid congestion, many trains have been run over alternative routes. To ensure that these vital war materials get through without delay, it is absolutely essential that the discharge of wagons is completed within 24 hours of arrival at destination.

Poster recently issued by the Great Western Railway as a further incentive to the staff to economise in the use of fuel. It is displayed in all offices, rooms, etc., where fuel is used

Special Railway Wagons for Aircraft

The arrival of aircraft from America presented a problem which the British railways have successfully solved. Main planes and fuselage parts imported in bulky cases 40 ft. long required transport. Special wagons to carry 20 tons, equipped with a well, were designed to overcome the difficulty of keeping these loads within the railway overall gauge. These special aircraft wagons, which were built in railway workshops, have proved their worth not only by conveying imported planes from the docks, but also in transporting the heavy volume of this war equipment which has been exported from this country to other theatres of war.

Reichsbahn Traffic Difficulties

The Berlin radio announced on November 19 that, by reason of a heavy increase in essential goods traffic, a substantial cut was being made in passenger train services. It was added that no public announcement of details would be made, but that lists of all cancelled trains (express, fast, and ordinary) were being exhibited at the principal railway stations. Zurich subsequently stated that the reductions amounted to 12 per cent.

Thefts from trains have increased by 150 per cent. during the past year, according to an announcement of the German Railway Administration. Whole goods wagons are stated to have been stolen during the past few weeks; three of them, loaded with food, disappeared without a trace.

Recent heavy R.A.F. raids on Berlin are reported to have caused substantial railway dislocation. That on November 18/19 is said by Zurich reports to have affected principally the southern districts of Steglitz, Lankwitz, Mariendorf, Marienfelde, and Neukölln. The raid of November 22/23 affected mainly the middle of the city, where the Potsdamer, Anhalter, Stettiner, Lehrter, Charlottenburger, Friedrichsstrasse (by delayed action bombs the next morning), and Yorkstrasse Stations are said to have been damaged, but heavy damage is also reported from the suburbs of Siemensstadt, Spandau, Neukölln, Pankow, and Lichtenberg. The 1918 Armistice railway carriage, housed in the Zeughaus (Unter den Linden), is believed to have been destroyed. Berlin was again raided on November 23/24.

German War Locomotives

In a speech in Berlin on November 17, Dr. Dorpmüller, the German Minister of Transport, said that German locomotives had been protected against the severity of winter conditions on the Eastern Front as a result of the experience of past winters.

It may be recalled that suitability of employment in the low temperatures encountered in the East was one of the features announced in connection with the first type of *Kriegslokomotive*, of which the first details were announced officially by the Germans on October 12 of last year. This was the one known as "Series 52," of which brief details and a picture were published in our issue of November 6, 1942 (p. 450), and further information in our issue of June 4 last (p. 560). The "Series 52" was always described officially as a transition type (or *Übergangs-Kriegslokomotive*), and a new type, to be known as "Series 42," was promised for the current year. Subsequently we learned through a neutral source last April that production was planned to begin in 1944, considerably later than previously had been hoped, and, as nothing further has been heard of the later type, it is a reasonable assumption that the heavy raids on German locomotive building plants have succeeded in deferring matters. Both the "Series 52" and the "Series 42" are being built by the Association of German Locomotive Builders (*Gemeinschaft deutscher Lokomotivfabriken*).

SEND
FEWER PARCELS
THIS CHRISTMAS
Delivery may be delayed
IF THEY MUST GO
★ Dispatch before Saturday, 18th December
★ Pack Securely
★ Address clearly in Block Letters, using black ink on white labels
★ Place duplicate address inside each package
BRITISH RAILWAYS
GWR · LMS LNER · SR

R.E.C. poster about Christmas parcels traffic

French Rail Traffic Cuts

The Vichy Minister of Communications has announced that the precarious coal situation in France has forced the Government to a further curtailment of railway traffic. Since November 1, fewer trains are being operated in France, and some services are maintained only on specified days of the week. Subsequently, Paris radio said that Paris—Brittany services were particularly affected.

Japanese-Built Philippine Highway

A new highway in the Philippine Island of Luzon was opened recently, according to a Japanese broadcast. It connects Vigan, on the north-west coast, with Cagayan (Tuguegarao), *via* Lalang, Banque, Claveria, and Aparai. The Japanese state that the highway has been built to encourage commerce between the Locos region and the Cagayan Valley.

Road Transport Situation in Ceylon

A message from Colombo, dated August 24, has been received by surface mail from our correspondent, outlining the road transport situation in Ceylon. About 2,500 motorcars have been immobilised. Immediate steps have been taken to remove the tyres and batteries, which the owners were required to deliver to the nearest place, such as a police station; they were paid the cost of transport. Police officers forwarded the tyres to the Central Tyre Depot for examination and grading. Those that are fit are to be sold to users of Essential Service cars; others re-treaded; and the balance sent as scrap to India. Owners are being paid for the tyres and batteries according to their value, and 10 per cent. of the running value of the car as compensation. By the payment of compensation, owners are being treated better than any other class of person whose properties have been requisitioned. It has been pointed out that car owners in England receive no compensation when their tyres and batteries are removed.

During the first three months of this year, more than 300 cars were converted to hire cars. After March last, the Minister

of Local Administration did not accept any request for conversion.

The purchase of any used tyre or tube, except with the authority of a permit from the Controller of Tyres, is prohibited, and no person may sell or dispose of any used tyre or tube except on a permit.

The formation of bus companies to take over the services from individual bus owners is said to have led recently to a deterioration in the service on certain sections, where the change has resulted in the withdrawal of a number of buses that were running under the old system. This is stated to be particularly marked in the case of bus services that serve areas far removed from railway stations.

To meet the rising cost of travel in areas not served by the major transport systems, and where the only modes of travel available to the public are rickshaws, bullock carts, and hire motorcars, the introduction of a limited number of buses to run short distances is under contemplation by the Government. These local services are expected to operate as feeders to the major services. The fares now charged by a bullock cart are about one rupee a mile, and for hire cars the rate has gone up to two rupees a mile or more. The former charged 25 cents a mile in normal times, and the latter fare was about 40 cents a mile. In the case of rickshaws, too, the fare has risen from about 20 cents a mile to 50 cents a mile.

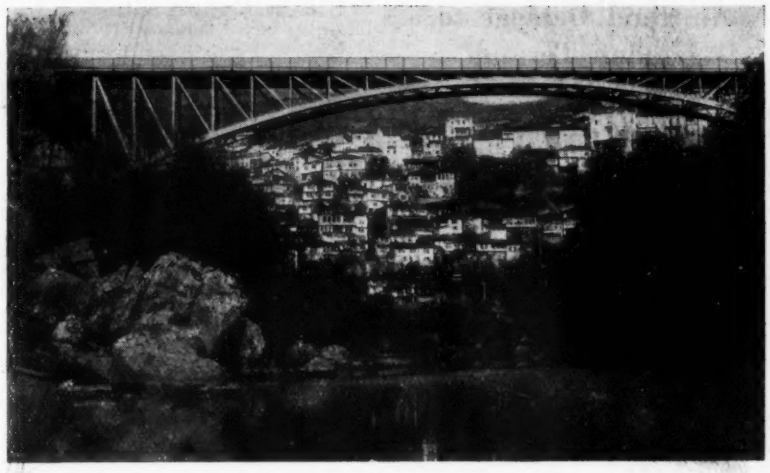
The assessment of the Colombo Tramway Company's plant, machinery, and rolling stock, as a preliminary to the purchase of the tramway service by the Colombo Municipal Council, has been begun.

Notable Sudan Transhipment

The Sudan Railways were called on recently to transport a fleet of military barges from Khartoum North Dockyard to Wadi Halfa for towage to Egypt. The barges were propelled to Abu Hamed by launches and removed from the river by slipways, loaded on flat trucks, and transported by rail to Wadi Halfa. The launches then returned to Atbara by river, when they were loaded up for transport by rail to Port Sudan. The barges were 60 ft. long, 18 ft. wide, and 5 ft. deep, and are believed to be most out-of-gauge load the Sudan Railways have ever undertaken. Apart from removing a few signals and point levers, trains loaded with barges were able to run from Abu Hamed to Wadi Halfa without obstruction. The Traffic Department carefully arranged train timings to prevent any crossings *en route*. The speed of the trains was restricted to 20 km.p.h. An undertaking of this kind naturally needs the closest co-operation between the three departments chiefly concerned, namely, Mechanical, Engineering, and Traffic, and it is gratifying to learn that the operation was effected without a hitch.

Rock Island Timetable Changes, U.S.A.

Some important changes have been made in the schedules of well-known trains of the Chicago, Rock Island & Pacific Railway between Chicago and the Pacific Coast. from September 12 last. Instead of a morning departure from Chicago at 10.15 a.m., the Golden State Limited now leaves Chicago at 8.30 p.m., and reaches Los Angeles at 9.25 a.m. on the third day instead of 8 p.m.; the distance by the C.R.I. & P. and Southern Pacific route is 2,340 miles. In the reverse direction the Golden State leaves Los Angeles at 6.30 instead of 8.30 p.m., and arrives in Chicago at 11.30 a.m. the third day instead of 12.25 p.m., a deceleration of 65 min. The Californian, previously a combined sleeping-car and chair-car train, is now composed of coaches only; it leaves Chicago 30 min. later, at 9 p.m., and reaches Los Angeles 80 min. later than before at 12.20 p.m., thus taking 2½ hr. longer than the Golden State. To take up the previous working of the Golden State Limited over Rock Island territory, a new train, known as the Southwest Express, and comprising coaches, a dining car and a sleeping car, now leaves Chicago daily at 9.10 a.m. for Dalhait, Texas, arriving at 2.10 p.m. the following day; it returns from Dalhait at 5 p.m. and reaches Chicago at 10.15 p.m. the following day; the distance is 1,030 miles. This is one of the first additional long-distance trains to be put into service since the wartime freezing of train schedules by the Office of Defense Transportation. Other trains now running on altered schedules are the Colorado Express, between Chicago and Colorado Springs; the Iowa-Nebraska Limited, between Chicago and Omaha; and the Mid-Continent Special, between Minneapolis and Kansas City. The company intimates that the changes have been made to facilitate troop movements and travel to and from camps on its lines.



Railway bridge at Tirnovo, Bulgaria, over the River Jantra, which is reported to have been destroyed in a recent Allied air raid

Notable U.S.A. Gauge Change

On August 25 the last run was made over the 3-ft. gauge track of the Colorado & Southern Railroad between Leadville and Climax, Colorado, thereby bringing to an end the operation of a narrow-gauge system which at the time of the gold rush in Central Colorado extended for some 384 miles. Laying of the original Colorado Central began in 1866, and, after various reorganisations and acquisitions, the Colorado & Southern attained practically the full extent of its mileage by 1898. The first serious shrinkage occurred in 1910, as the result of washouts, and a fall of roof in the Alpine tunnel; other abandonments followed, or, on one or two isolated sections, changes to standard gauge, until by 1942 only the 14 miles from Leadville (where connection was made with the Denver & Rio Grande Western standard-gauge branch from Malta, Colorado) to Climax remained in operation on the 3-ft. gauge. With the outbreak of war this became of considerable importance, by reason of the molybdenum mining carried on at Climax, where nearly 80 per cent. of the world's supply of molybdenum is mined. During 1943, therefore, in order to avoid the work of transhipping the molybdenum concentrate from narrow to standard gauge wagons at Leadville, the decision was reached to widen the Leadville-Climax line from narrow to standard gauge.

Because the product of the Climax mines is of such importance to the war effort, it was decided that conversion must take place without interrupting service to the mine for more than 24 hr. The branch is 10,207 ft. above sea level at Leadville, and 11,324 ft. at Climax; the highest yard track at Climax reaches an elevation of 11,465 ft. It was therefore necessary, for climatic reasons, to carry out the conversion during the short summer season. On May 1 last an extra gang began laying 8 ft. sleepers; this task was simplified by the fact that for some time past all re-sleepering had been with 8 ft. sleepers, in view of the probability that the gauge would ultimately be widened. A second gang then began laying the standard gauge outside the narrow gauge, with re-rolled 75 lb. and second-hand 70 and 80 lb. per yd. rail in place of the narrow-gauge 40 and 56 lb. sections. As soon as sufficient standard-gauge rail had be laid, a standard-gauge locomotive with two steam ditchers, a Jordan spreader, and four dump cars were brought up over the D. & R.G.W. line to Leadville, and began work on the branch, widening the formation; the gangs worked 10 hr. a day, seven days a week, in order to complete the work before the onset of winter, which begins at this altitude in mid-September. All was in readiness for the changeover, however, before the end of August.

Unlike the remainder of the Colorado & Southern lines, which had gradients as steep as 1 in 25, and curves sharper than 3 ch. radius, the Leadville-Climax branch is at no point (except in Climax yard) steeper than 1 in 50, and the sharpest curves are of 4½ ch. radius. Whereas the three narrow-gauge 2-8-0 locomotives in use were limited to trailing loads of 275 tons, the two standard-gauge 2-8-0s that have taken their place can handle loads up to 500 tons. A rotary snowplough is used in the winter which was originally built for the standard gauge, was rebuilt to operate over the 3-ft. gauge, and has now been reconverted to standard gauge. In winter the plough is in practically continuous use, for this branch, equal in altitude to the Jungfraujoch in Switzerland, is now the highest standard-gauge line in North America. The old narrow-gauge locomotives and wagons have been sold, and some are serving the war effort on 3-ft. gauge lines in Alaska and Hawaii.

Air Raid Damage to London Termini

During the eight months from September, 1940, to May, 1941, the German Luftwaffe made determined and persistent efforts so to damage the London railway termini as to make them unusable and thus cause serious disorganisation of railway services generally. These sustained attacks failed mainly because of the inaccuracy of the bombing, doubtless caused by the defence measures and darkness, and also because of the efforts of the Civil Defence and railway personnel. In any event, many more bombs fell in the vicinity of stations than on the premises and the track, but, with such frequent bombing, it was inevitable that the stations should sustain some damage. We have previously reproduced a number of photographs illustrating the damage which occurred, and, although it is still not possible to give exact details of every occurrence, the following details give a general idea of the variety of incidents at the main London stations.

During these months many bombs fell on the track and buildings at Waterloo Station, Southern Railway, and during the "fire raid" on London the results of oil bombs and incendiaries made it necessary to close the station for a short time. Early in January the normal services were resumed, but the same night a heavy bomb destroyed part of the general offices about 100 ft. from the station proper; although the station was thronged with many hundreds of passengers, the only casualty was a ticket collector who sprained his ankle as a result of a surprised jump in the air. A rather heavy incendiary bomb raid a few nights later was followed by others which culminated in the ferocious raid of May 10/11. Outside the station many fires were raging and inside many bombs were falling. One H.E. fell on the track and a fire was started in the stores. An incendiary bomb fell on the premises adjoining the workshops and started a fire which quickly spread from the parcels vans to a stock of spirits which was soon a raging furnace. Early next morning the contents of two more stores burst into flames, necessitating the speedy removal of trains from the vicinity.

In one raid at Charing Cross Station, Southern Railway, many incendiaries were dropped on the station premises from the forecourt to Hungerford Bridge, starting fires in the buildings and in the coaches of three trains standing in the station, and one on the bridge. While these fires were being tackled, a large bomb landed outside the signal box and became welded to the electric rail. Some 30 min. later a large fire started up under the bridge timbers about 40 yd. from the bomb. The fire fighters made strenuous efforts to quench the fire and eventually succeeded, although at one time the flames reached within 10 ft. of the bomb. During this action the signalman, a man with 52 years of service, vehemently refused to leave his post, and kept in constant touch with the stationmaster by telephone, reporting upon the progress of the firefighting and other local incidents which were occurring.

At Cannon Street Station, Southern Railway, large numbers of incendiaries set light to the roof, and an H.E. bomb damaged the wall by No. 8 platform where a train and two engines were standing. A newspaper train was also standing at another platform, and, as blazing planks and debris were falling on these trains, it was necessary to work them out of the station. Despite points and signals being out of order, the two engines and the newspaper train were drawn out on to the bridge across the River Thames. Almost immediately an H.E. hit the first engine and the blast blew the body of an adjacent coach into the river and derailed three vans of the newspaper train. Incendiaries then set light to several vehicles. After the water supply had failed, supplies were obtained from the tank of an engine for firebuckets and stirrup pumps and the fires were eventually extinguished.

At Victoria Station, Southern Railway, a number of incidents occurred, including the unique one of the arrival of an enemy plane through the roof. Holborn Viaduct Station was burned out, but was quickly repaired and re-opened very shortly afterwards. London Bridge Station survived a number of attacks in which heavy bombs were used. The most serious incident was the penetration of an air raid shelter by an H.E. bomb which killed many persons.

At Paddington Station, G.W.R., a large bomb exploded near the stationmaster's office, demolishing part of the adjacent offices and other buildings on No. 1 platform. Although it took three days to remove the debris, services were maintained punctually throughout, apart from the cancellation of a few early trains on the morning the damage occurred.

Euston Station, L.M.S.R., has a tale to tell of blocked platforms, an oil bomb on its offices, H.Es. on the station, and damage to the hotel. The staff at St. Pancras station had an uncomfortable time when a heavy bomb fell near the buffer stop, causing a large crater. At the other end of the station four bombs fell, two of which exploded below ground causing craters, one of which was bridged temporarily and the other filled in. At Kings Cross Station, L.N.E.R., a bomb fell on the booking offices; Liverpool Street Station was damaged by fire; and Marylebone and Fenchurch Street Stations were also damaged.

Although the nature of the damage varied widely at the different stations, the incidents all had as common features the courage, fortitude, and steadfastness of all ranks of railway staffs during the attacks, and the initiative, energy, and resource displayed by them in repairing the damage and restoring communications at the earliest possible moment. Main-line tracks were restored in a few hours, repairs often being begun before the raid was over, and damaged bridges were restored in a day. Truly, the nation owes a great deal to the thousands of railwaymen who "kept the traffic moving."

Locomotive Fuel in Victoria

One of the major wartime problems with which transport undertakings throughout the world have been faced, has been the need to maintain essential services with native fuel. Considerable attention has been devoted to the widespread problem of an alternative to petrol for road motors, but railways in many countries have also experienced the necessity of firing steam locomotives with emergency, and often unsuitable, fuel.

In Australia, the locomotives of the Victorian Government Railways fire their locomotives normally with Maitland coal for passenger services and Wonthaggi coal for goods services, but since early in 1941 the Department has found it difficult to obtain its full requirements of these classes of coal. As a result, Lithgow coal has been used in increasing quantities. Indeed during the 12 months up to last August approximately 40 per cent. of the total coal used on locomotives was obtained from this source.

The Lithgow mines are situated about 100 miles west of Sydney, New South Wales, and coal from that area is brought overland to Victoria. To minimise haulage it is used principally in the north-eastern and northern districts. Compared with Maitland coal, Lithgow coal has a lower heat value, and is slower burning. An additional disability is that during combustion it produces a large quantity of fine ash which, unless regularly removed, impairs the steaming ability of the locomotive by restricting the supply of air to the fire bed.

Early experiments indicated that, although this could be done efficiently on locomotives fitted with the shaker type of grate, some difficulty was experienced when burning Lithgow coal on the fixed Rosebud grates, as fitted to all "A" and "D3" classes of Victorian Railways locomotives, because the small circular apertures in them did not permit of disposal of the ash while running. The excessive quantities which accumulated in the fire bed considerably affected combustion, resulting in frequent cleaning of fires, poor steaming, and a high coal consumption. It was therefore apparent that locomotives of those classes regularly using Lithgow coal required either shaker grates or a different type of fixed grate that would enable the fire bed to be kept free from excessive ash.

By reason of the time involved in fitting shaker grates, the necessity to provide quickly some more satisfactory method of burning quantities of Lithgow coal, and the uncertainty as to how long the present rate of supply to Victoria would last, a fixed grate was devised that could be fitted quickly at locomotive depots and would be able to burn other classes of coal used in Victoria, if required. This has wide slots instead of the small round holes of the Rosebud grate, and this form of grate is now being fitted at the rate of about 6 engines a week in the districts where Lithgow coal is used. The new design of grate enables better and cleaner fires to be maintained when using Lithgow coal, with a reduction in the quantity of coal consumed and an improvement in steaming.

H.M. Stationery Office Paper Economy.—His Majesty's Stationery Office has achieved some far-reaching economies in the use of paper. At the outbreak of war, it reviewed the whole position of specifications with the mills responsible for supplies, with the result that it achieved a reduction in consumption of some fifteen thousand tons of paper. A Paper Shortage Committee then was set up, to devise new methods of economy. Hints covering every aspect of paper saving were distributed in Government departments. Among the steps which the committee has taken to check wastage has been that of stipulating that all demands for stationery which amount to more than half of pre-war requirements for the same purpose be subject to investigation by the Treasury. By progressive reductions in size and substance, the yearly saving in duplicating paper now amounts to 750 tons, in carbon paper to 16 tons, and in typing paper to 500 tons.

Welding Progress

The requirements of war production have determined the research programme of the committees and sub-committees of the Welding Research Council. This fact emerged from last year's Report, which covered five years of welding research (see *The Railway Gazette* of September 4, 1942, page 228), and the Progress Report now before us, published by the Institute of Welding, and covering the calendar year 1942, shows a development in the same direction. Various current investigations have since been completed, new problems have been attacked, and the urgency of some of them led to a considerable increase in the research staff. In the following notes only some of the subjects dealt with in the Report are mentioned, particularly those of interest in railway engineering.

The Weldability of High-Tensile Structural Steels.—Previous work on steel of 37 to 43 tons per sq. in. tensile strength with 23 tons per sq. in. yield point has since been extended to other steel qualities including carbon-managanese and chrome-manganese-copper steels. It seems that the carbon content will have to be restricted to 0·2 per cent. if cracking of welds is to be avoided. Tests are proceeding with large gauge electrodes (4 S.W.G.) to ascertain to what extent the tendency to crack is influenced by the size of the fillet weld. This investigation seems to be of particular importance in view of the extensive application of automatic welding with heavy-gauge electrodes.

British Standard Specification No. 968 of 1941 was based largely on the results of these investigations. Since then a revision had to be made, and it seems that at least two alternative chemical analyses will have to be included. These high-tensile steels became increasingly important in war production, not only in structural work, and fully-efficient welded joints are of course a primary consideration.

Weldability of Alloy Steels.—The work was carried out on manganese-molybdenum steel plates 1 in. thick with 35 tons per sq. in. yield point. Their weldability is investigated under different degrees of restraint, and with a preheating temperature gradually increasing to 250° C. It is hoped to find a fully weldable steel with 45 tons per sq. in. yield point. A comparison of this figure with the yield points for structural mild steel and high-tensile structural steel, 16 and 23 tons per sq. in. respectively, may give an idea of the superiority of these alloy steels.

The Weldability of Cast Iron.—A report on the various methods of welding and the results obtained has been published.

Physical Properties of Welding Slags.—At Sheffield University investigations are carried out on the viscosity of various slags and its dependence on their chemical composition. This should be of particular importance to electrode manufacturers.

Weldability of Non-Ferrous Metals.—One of the investigations is concerned with the effect of selenium and tellurium when welding copper by the oxy-acetylene process. It has been found that this effect can be balanced by adding silicon either to the parent metal or to the electrode.

Ship Structures.—After a certain delay, considerable progress has been made recently in carrying out experimental work with a variety of rolled steel sections and various thicknesses of steel plates. Water tests on actual ship structures have been conducted.

Frame Structures.—Stanchions with rectangular cross section in single curvature have been covered in a previous paper. Stanchions with double curvature are being investigated with the aim of developing a method of analysis for calculating the collapse load.

Resistance Welding.—Investigation of spot welding of ferrous metals on mild steel plates of ⅛ in. to ⅜ in. thickness has been completed, and optimum welding conditions have been laid down. For light alloys a report has been issued. The brittle lacquer process for stress analysis has been applied with success. Standard tests for spot welds have been recommended primarily to facilitate production control. A comprehensive programme has been prepared for the aircraft industry, covering panels in tension and compression, with or without stiffeners, with four different thicknesses of light alloy sheeting.

Pressure Vessels.—Permissible working stresses for Class 1 welding joints have been recommended, and more work is in hand covering X-ray technique, both the photographic and the radiographic part.

Today all this work has to serve the requirements of war production, but there is little doubt that the results of this extensive research will prove of considerable help in industrial reconstruction after the war.

The Gyroscope

On Friday, November 19, at the Institution of Mechanical Engineers, London, the thirtieth Thomas Hawksley Lecture was given by Professor C. E. Inglis, O.B.E., M.A., LL.D., F.R.S., M.I.Mech.E., who chose for his subject, "Gyroscopic Principles and Applications." After explaining why, in a gyroscope, cause and effect seemed to act in planes at right angles to one another, the speaker gave some everyday examples of gyroscopic action. He considered the gyroscopic torque produced by the driving wheels of a locomotive when rounding a curve of 1,200 ft. radius at 100 ft. per sec. With typical figures for diameter and mass, a single wheel-pair was found to exercise an overturning tendency on the locomotive, represented by a transfer of 173 lb. from the inside to the outside rail; this was not of sufficient importance to be considered when calculating track superelevation. However, if one wheel dropped lower than its fellow, as a result of track irregularity, the axle would have a swerving tendency; the gyroscopic torque produced by a descent and recovery of half an inch, supposing this to occur in a tenth of a second, would amount to 2,700 lb.-ft., which could not be considered negligible. If both wheels descended equally, no such swerving would be induced; this was a good reason for placing rail joints side by side instead of staggering them, as was sometimes done in other countries.

After describing the gyro compass, the ship stabiliser, and several other appliances, the speaker dealt with the problem of the mono-rail. Temporary stability could be given to a car running on one rail if a gyroscope were mounted so as to have its axis of spin vertical and its axis of precession lying horizontally across the vehicle. However, precession would eventually bring the plane of gyroscope rotation into the vertical and then the car would topple over. Making the gyroscope "bottom-heavy," so as to retard precession, could only weaken its influence and accelerate the loss of car stability. A "top-heavy" gyroscope gave stability, but with a side-to-side oscillation that increased eventually to dangerous amplitudes. In the Brennan mono-rail the gyroscope had its axis of spin horizontally across the vehicle and its axis of precession was vertical. The mountings allowed a limited tilting from side to side of the axis of precession and, as the gyroscope precessed, rollers concentric with the axis of spin engaged ramps; these had the effect of forcing precession. This arrangement gave permanent stability but the action was rather jerky. To maintain stability when rounding curves, the Brennan system employed two gyroscopes running in opposite directions and geared so as to precess equally in opposite directions.

The lecture was accompanied by demonstrations with models; after its termination Professor Inglis was formally made an Honorary Member of the Institution.

Questions in Parliament

Public Telephones at London Termini

Mr. N. B. Goldie (Warrington—C.) on November 23 asked the Postmaster-General whether he was aware of the considerable numbers of public telephones situated at London railway termini which were not in working order; and whether, in view of the great inconvenience caused, he would arrange for more adequate inspection and for the carrying out of necessary repairs.

The Postmaster-General (Captain H. F. C. Crookshank) in a written answer stated: It is unfortunately difficult at times to arrange for the speedy restoration of service at telephone call boxes at London railway termini. This is due in the main to the frequency with which the equipment is subjected to wilful damage coupled with the depletion, because of war needs, of the skilled repair staff. I appreciate the inconvenience which is occasioned by delay in this matter and the matter will continue to receive special attention. At railway termini in London it is already the practice to inspect call offices about three times a week.

"Motorways for Britain" Exhibition.—At 22, Lower Regent Street, London, S.W.1, on December 9, at 12 noon, a "Motorways for Britain" Exhibition will be opened by Sir William Rootes, K.B.E.

Third Railway Fuel-Economy Conference.—At the third railway fuel-economy conference, held at Glasgow on November 24, Mr. F. H. Gee, of the L.M.S.R. Fuel Efficiency Committee, made it clear that the organisation for domestic fuel economy on British railways is very thorough. Allowance for open fires is regulated and varies from 1 lb. to 2½ lb. an hour a grate, according to geographical latitude. Some 15,000 fuel watchers carefully note consumption. Gas and electricity meters are read at short intervals, and the records are checked and scrutinised carefully. "Smoke-box char" is being used to the extent of 35 per cent. in some cases. Railway hotels alone have cut consumption by 5,000 tons. (An abstract of the paper read by Mr. L. P. Parker, Locomotive Running Superintendent (Eastern Section) Southern Area, L.N.E.R., at the second conference, at Manchester, on October 20, appears on page 559).

XUM

Notes and News

G.I.P. Railway Annuities.—It is notified in accordance with the provisions of the Great Indian Peninsula Railway Purchase Act, 1900, that on November 1, 1943, a total sum of £25,764,927 was invested for the purpose of providing a sinking fund in respect of Class "B" annuities.

Agreed Charges.—Applications have been made to the Railway Rates Tribunal for the approval of 70 further agreed charges under the provisions of Section 37 of the Road & Rail Traffic Act, 1933. Notices of objection must be filed on or before December 7 with the Registrar, at Wellington House, 125-130, Strand, London.

Railway-Equipment Factory in Brazil.—Reuters reports that the company (to which we made brief reference last week in an editorial note on page 525) which is being formed in Brazil, and is negotiating with British and American concerns for the manufacture under royalty of vacuum brakes and couplers, is to have a capital of Cr. $100 million (about £1,200,000), to be subscribed by the principal railway companies. The company's works, it is understood, will be situated in San Paulo.

Southern Railway Staff Canteen Opened.—A canteen, complete with all modern equipment, was opened in Sussex on November 18 by the Traffic Manager, Southern Railway, amid a large gathering of staff. This is the twelfth staff canteen to be opened by the company in recent months, and six more are planned to be ready within the next few weeks. The building of a further seven is likely to begin soon. In addition to these new canteens, there have been more than fifteen in constant use for some years. Ten mobile canteens are always in readiness for emergency purposes.

Bolivian-Paraguayan Commercial Treaty.—Reuters reports that a combined Bolivian-Paraguayan commission is investigating the basis of a commercial treaty between the two countries. The agreement is to cover the construction of a pipe-line to convey Bolivian oil to a point on the River Paraguay, and the raising of capital for the building of an international road. In addition, notes are stated to have been signed dealing with wireless communications; an air service between La Paz and Asuncion; and combined representations to be made to the Argentine Government to obtain a reduction in railway rates for Bolivian and Paraguayan goods entering that country under certain conditions.

Motor Coaches Limited.—In pursuance of Section 236 of the Companies Act, 1929, a meeting of members of this company (now in voluntary liquidation), will be held at Brettenham House, Lancaster Place, London, on December 20, at 11.45 a.m., for the purpose of having an account laid before them showing the manner in which the winding-up has been conducted, and the property of the company disposed of, and of considering the following resolution which will be proposed as an extraordinary resolution:—"That the books, accounts, and documents of the company and of the liquidators be handed over to B.E.T. Omnibus Services Limited and Tilling Motor Services Limited, as those companies may determine." The special resolution to wind up Motor Coaches Limited voluntarily was passed on December 8, 1942. Its relationship to Tilling & British Automobile Traction Limited (now in liquidation) was described in our issue of January 8, 1943, at page 54. The report of the liquidators of Tilling & British Automobile Traction will be considered at a general meeting at Brettenham House on December 20, at 12 noon.

Gauges of Swedish Private Railways.—Experts are stated to be studying the problem of changing the gauges of several Swedish privately-owned railways to conform with the standard one of 4 ft. 8½ in.

L.N.E.R. Debenture Stock.—Notice is given by the London & North Eastern Railway Company that, for the purpose of preparing warrants for interest on the company's 3 per cent. and 4 per cent. debenture stocks, and 4½ per cent. sinking fund debenture stock, for the half-year ending December 31, the balances will be struck as at the close of business on December 11. (See our Official Notices, page 571).

Canadian National Railways.—Gross earnings for October, 1943, were $37,585,000, an increase of $1,583,000 in comparison with October, 1942. Operating expenses advanced from $27,099,000 to $28,346,000, leaving net earnings $336,000 higher, at $9,239,000. Aggregate gross earnings from January 1 to October 31, 1943, amounted to $364,534,000, an advance of $57,705,000 in comparison with the first ten months of 1942, and the aggregate net earnings of $81,357,000 showed an improvement of $9,693,000.

Argentine Foreign Trade.—Argentine exports during the first ten months of this year were valued at 1,756,389,000 pesos (£177,783,300), against 1,502,373,000 pesos (£90,162,400) for the same period of 1942, and imports at 780,116,000 pesos (£46,807,000), compared with 1,110,348,000 pesos (£66,620,900). The excess of exports therefore amounted to 976,273,000 pesos (£58,576,400), against 392,025,000 pesos (£23,521,500) for the corresponding 1942 period. (Pesos converted at the rate of 16⅔ to the £).

Coronation Scot in U.S.A.—Major-General E. B. Gregory, Quartermaster-General of the United States Army, has written to Mr. R. B. White, President of the Baltimore & Ohio Railroad Company, referring to the illustrations in our August 20 issue, showing the Coronation Scot at the Jeffersonville Quartermaster Depot. Major-General Gregory states that the train is serving a most useful purpose, and, judging from the interior view of the Club Car, the officers are fully enjoying the accommodation and facilities offered. Mr. Robert M. Van Sant, Director of Public Relations, of the Baltimore & Ohio Railroad Company, has forwarded Major-General Gregory's letter to the L.M.S.R., the British company which presented the train to the United States Army, with the suggestion that it should be sent also to *The Railway Gazette* so that all British railway people might know of the official commendation of the Coronation Scot as now functioning.

South Indian Railway Purchase Proposed.—The Government of India having expressed the desire to terminate the company's contract before the first option date, namely, December 31, 1945, negotiations have been proceeding between the Secretary of State and the Board to arrive at a figure of compensation to the stockholders for the premature termination of their contract. A provisional settlement, which is subject to acceptance by the stockholders, has been arrived at on the following basis:—Contract to be determined as at March 31, 1944, on payment by the Secretary of State of a sum of £1,112,500 as the price of the company's interests, which sum includes provision for the payment to the directors and London office staff of suitable amounts by way of compensation for their premature loss of office. An extraordinary general meeting of stockholders will be called at an early date to consider the matter.

Central Argentine Railway Moratorium.—Meetings of holders of the outstanding 4 per cent. debenture stock, of the outstanding 5 per cent. redeemable debenture stock 1967-87, of the outstanding 5½ per cent. (bearer) notes, and of the interest certificates of the Central Argentine Railway Limited have been convened for

British and Irish Railway Stocks and Shares

Stocks	Highest 1942	Lowest 1942	Prices Nov. 26, 1943	Prices Rise/Fall
G.W.R.				
Cons. Ord.	58	39	61¼	– ¼
5% Con. Pref. ...	115½	105½	115½	+ ½
5% Red. Pref. (1950)	109½	103½	107	– –
5% Rt. Charge ...	133½	123½	128½	+ 1
5% Cons. Guar. ...	130½	121½	12–½	+ 1
4% Deb.	117	105	113	– –
4½% Deb.	118	108	113½	– –
4½% Deb.	125	113	118½	– –
5% Deb.	137	127	130½	+ 1½
2½% Deb.	77	70	74½	– –
L.M.S.R.				
Ord.	28½	16⅜	32½	– ¼
4% Pref. (1923) ...	63½	50½	62	– ½
4% Pref.	76½	67½	76	– –
5% Red. Pref. (1955)	103¾	94½	103½	– –
4% Guar.	104½	97½	100	– –
4% Deb.	108¾	101½	105½	– –
5% Red. Deb. (1952)	111	107½	109½	– –
L.N.E.R.				
5% Pref. Ord. ...	9¾	2⅜	10	– ¼
Def. Ord.	5	1⅜	4⅜	– –
4% First Pref. ...	62	49½	61	– ½
4% Second Pref. ...	32½	18½	33½	– ½
5% Red. Pref. (1955)	95½	79	98½	– –
4% First Guar. ...	98	88	96	– –
4% Second Guar. ...	90	78	88	– –
3% Deb.	85	76	82	– –
4% Deb.	106½	100½	104½	– –
5% Red. Deb. (1947)	106	103	103	– –
4½% Sinking Fund Red. Deb.	106	102½	105½	– –
SOUTHERN				
Pref. Ord.	77	61½	77½	– 1
Def. Ord.	23½	14½	24½	– ½
5% Pref.	112½	104	114	– –
5% Red. Pref. (1964)	110⅜	105½	112½	– –
5% Guar. Pref. ...	131	121½	125½	– –
5% Red. Guar. Pref. (1957)	115½	109½	112½	– –
4% Deb.	116	104½	111	+ ½
5% Deb.	134	125½	128	– –
4% Red. Deb. (1962-67)	110½	106	107½	– –
4% Red. Deb. (1970-80)	111	106½	108½	– –
FORTH BRIDGE				
4% Deb.	109⅞	108	106	– –
4% Guar.	105½	100	103½	– –
L.P.T.B.				
4½% "A"	122½	111	117½	+ 1
5% "A"	131½	122	126½	+ 1
3% Guar. (1967-72)	95⅜	97⅛	98⅛	– –
5% "B"	121	111¼	117⅛	± 1
"C"	56½	38	67	– 1
MERSEY				
Ord.	27½	20½	32	– –
3% Perp. Pref. ...	61½	56½	65	– –
4% Perp. Deb. ...	102½	99½	103	– –
3% Perp. Deb. ...	80½	76	79	– –
IRELAND				
BELFAST & C.D.				
Ord.	9	4	6½	– –
G. NORTHERN				
Ord.	29½	12½	21½	+ ½
Pref.	—	—	42½	– –
Guar.	—	—	60⅞	– ⅞
Deb.	—	—	82	+ ½
G. SOUTHERN				
Ord.	25	10	24½	– ½
Pref.	29	12½	25½	– ½
Guar.	53	35½	58	+ ½
Deb.	71½	55½	83⅜	– ⅜

§ ex-dividend

OFFICIAL NOTICES

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. The charge for these advertisements is 2d. per word with a minimum of 10 shillings for each insertion. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

London and North Eastern Railway

NOTICE is hereby given that, for the purpose of preparing the warrants for Interest on the Company's 3% and 4% Debenture Stocks and 4½% Sinking Fund Debenture Stock for the half-year ending 31st December, 1943, the balances will be struck as at the close of business on 11th December and Interest will be payable only to those Stockholders whose names are registered on that date.

Transfers of the above-mentioned Stocks should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 1.0 p.m. on 11th December.

By Order,
W. H. JOHNSON,
Secretary.

Marylebone Station,
London, N.W.1.
1st December, 1943.

Now on Sale

Universal Directory of Railway Officials and Railway Year Book

49th Annual Edition, 1943-1944

This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented

Price 20/- net.

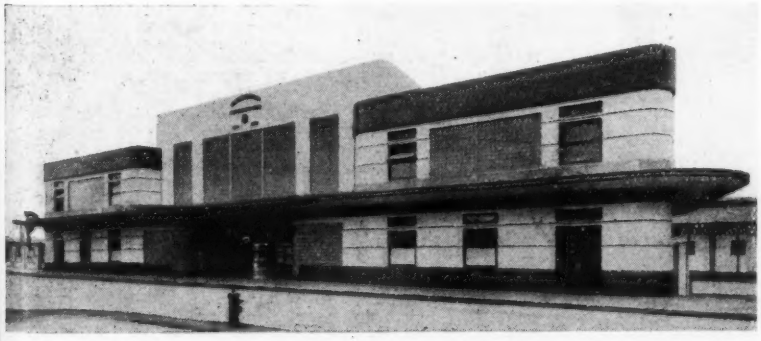
THE DIRECTORY PUBLISHING CO., LTD., 33, Tothill Street, Westminster, S.W.1

December 16, at Winchester House, Old Broad Street, E.C., at times varying from 12.30 p.m. to 12.45 p.m., to consider a resolution for the extension of the moratorium period from December 31, 1943, to December 31, 1945.

Leopoldina Railway Co. Ltd.—Notice is given that this company will on January 1, 1944, pay to the holders of its 4 per cent. debenture stock on the register on November 27, 1943, interest at 2 per cent. (actual) less tax, in respect of the half-year ended June 30, 1940.

C.P.R. Air-Line Traffic.—Passengers carried by Canadian Pacific Air Lines during September numbered 8,018, representing an increase of 50 per cent. over the same month a year ago. The number of passengers carried for the first nine months of the year was 55,489, a gain of 24 per cent. over the same period last year. Air mail handlings continued to show increases, and, although total weight carried for September was only one per cent. higher than for the same month last year, the total for the year to date was 43 per cent. higher than for the corresponding period in 1942.

Modern Architecture in Central America.—One of the most recent railway buildings to be completed in Central America is the new two-storey station at San Jose, Costa Rica, built by the Pacific Railway. As may be seen from the accompanying illustration, it is a modern re-inforced-concrete structure, strongly reminiscent of London Transport and Southern Railway suburban practice. The use of glass blocks in the walls contributes towards making an attractive and well-lighted building. On the ground floor are the waiting room, ticket offices, information booth, luggage department, and telegraph office. On the first floor are the library and railway administrative offices. The station occupies a site 50 ft. × 165 ft. The Pacific Railway, which is a 3-ft. 6-in. gauge line, is owned by the Federal Government of Costa Rica. A brief description and sketch map were published in our issue of May 14 last, page 484.



New reinforced-concrete station at San Jose, Pacific Railway of Costa Rica

Great Southern Railways Stocks.—On the motion of Mr. S. Lemass, Minister for Industry & Commerce, the Eire Dail has agreed to the establishment of a tribunal to investigate and report on the dealings in Great Southern Railways stocks between January 1, 1943, and November 18, 1943; and the extent, if any, to which any of such dealings were attributable to the improper use or disclosure of information concerning proposals for the capital reorganisation of the Great Southern Railways. The tribunal will be presided over by a judge, and will have full power to enforce attendance of witnesses and production of documents.

Railway Benevolent Institution Collection.—A New Year's Day collection in aid of the Railway Benevolent Institution will be made on January 1, 1944, at all railway stations in Great Britain and Ireland. The number of railway employees who became members of this year's casualty fund is 179,211, and assistance has been rendered to 90 widows of men killed, 500 widows of men dying from illness, and 4,706 men accidentally injured, making a total of 5,296 cases relieved, or one in every 34 contributors. The amount required for the efficient continuance of the work, and to meet the many applications for relief from the general fund, continues to increase, and it is hoped that the travelling public will augment the contributions of the railwaymen.

Brush Electrical Engineering Co. Ltd. Foremen's Conference.—The Foremen's Association of the Brush Electrical Engineering Co. Ltd. convened, at Loughborough, its first annual conference, during the weekend of November 5, 6, and 7. The conference is believed to be among the first of its kind, and foremen from the British Thomson-Houston Co. Ltd., General Electric Co. Ltd., Imperial Chemical Industries Limited, Mirrlees, Bickerton & Day Limited, Metal Box Co. Ltd., Herbert Morris Limited, Standard Telephones & Cables Limited, and many other companies, and irom Royal Ordnance Factories, were fnvited to take part. The dinner held on November 5 was attended by the Regional Controller, Ministry of Labour & National Service, and representatives of the supply ministries, and the opening address, on "Industrial Relations," was given by Mr. R. Lloyd Roberts, Under-Secretary, Ministry of Labour & National Service. Mr. Alan P. Good, Managing Director, Brush Electrical Engineering Co. Ltd., welcoming the guests, said that the problem of foremanship was the biggest and most difficult in front of us, and that the only way we could learn was from other people's experience, and by exchanging experiences with them. He paid tribute to Mr. Lloyd Roberts, whom he regarded as one of the pioneers of industrial relations in this country. The programme of the conference comprised sessions dealing, among other matters, with foremen's responsibilities in the training of employees; collaboration with organised labour; the place of the foreman in the factory organisation; and the modern approach to the maintenance of discipline. The chair at each session was taken in turn by directors of the Brush Electrical Engineering Co. Ltd.

Contracts and Tenders

Below is given a list of orders placed recently by the Egyptian State Railways :—

Allen West & Co., Ltd.: Spares for steam railcars.
J. Stone & Co. Ltd.: Hydrometer.
Tudor Accumulator Co. Ltd.: Hydrometer.
George Turton, Platts & Co. Ltd.: Springs.
I.C.I. Metals Limited: Copper sleeves.
Robert Hyde & Son Ltd.: Intermediate rubbing blocks.
Howell & Co. Ltd.: Steel pipes.
J. P. Skinner & Co. Ltd.: Release springs.
Brown Bayley's Steel Works Limited: Tender draw-hook springs.
Stanton Ironworks Co. Ltd.: Pipes.
Richard & Ross Limited: Tubes.
Tubes Limited: Tubes.
Staveley Coal & Iron Co. Ltd.: Tubes.
Arthur Balfour & Co. Ltd.: Files.
No. 1 Stores Depot (T/N): Tyres.
Murex Welding Processes Limited: Steel wires.
British Oxygen Co. Ltd.: Welding rods.
Siemens Bros. & Co. Ltd.: J/switch, inert cells.
Johnson, Matthey & Co. Ltd.: Contracts.
Bayliss, Jones & Bayliss Limited: Stay rods.
Pickford Tool Co. Ltd. 9 Taps, tapers.
Ericsson Telephones Limited: Telephone and telegraph materials.
Ruston & Hornsby Limited: Atomiser.
Chance Bros. & Co. Ltd.: Red glass panes.

Railway Stock Market

Stock Exchange markets have been inactive and slightly reactionary in trend. The smallness of the demand in evidence for industrial and kindred securities was again attributed mainly to uncertainty and conflicting views as to the post-war period. Sentiment also reflected a disposition to await confirmation of vague reports as to impending developments for still closer co-operation between the United Nations, which were current in the early part of the week. British Funds maintained a relatively steady undertone. Prior charges of the main-line railways were well maintained, but because of the easier market tendency, slightly lower levels ruled for most of the junior stocks in the absence of improvement in demand; selling appeared to be on a very moderate scale. Sentiment failed to show general response to the moves being made to approach the Government to remedy the apparent injustice to holders of L.N.E.R. preferred and deferred stocks. As has been mentioned in these notes, the latter provide the only instance of equity securities in an important undertaking playing a vital part in the war effort which are precluded from receiving any distribution. As events have turned out, the Government drove a hard bargain when the fixed rental agreement with the railways was negotiated in 1941; but the railway companies did the best that was possible for their stockholders, and it should not be overlooked that there was the possibility of heavy air-raid damage, which according to views then current, might have affected earnings of the railways very considerably. The companies, having accepted the agreement, cannot be expected to press for its revision, but this does not, of course, prevent stockholders and others attempting to secure revision or modification to make it more equitable. It is difficult to see how the lot of L.N.E.R. preferred and deferred stockholders could be improved without holders of second preference receiving their full 4 per cent. dividend. Moreover, it would seem that any modification to make the financial agreement more equitable for the L.N.E.R. would involve a general revision of the agreement as affecting all railway stockholders. A point often overlooked is that the fixed rental is to run until at least one year after the termination of hostilities, and that it is not clear whether this implies when Japan as well as Germany is defeated. Nevertheless, it would seem that the agreement is bound to remain in force after the war until such time as there is a general solution to the important and complicated problem of transport organisation and control and the position of the railways in relation to this. Under wartime conditions "standard revenue" is being considerably exceeded by current earnings, and "standard revenue" would not only provide full dividends on L.N.E.R. second preference and preferred stocks, but also nearly 4¾ per cent. on the deferred. The reason why railway junior stocks are valued on a large yield basis does not, of course, turn on the fact that only moderate dividends are permitted by the fixed rental, but is due to uncertainty as to the position of the railways in connection with post-war transport organisation. More reassuring views regarding the latter have recently gained ground, however; had the general tendency of markets been less uncertain, there seems little doubt that junior stocks would have shown considerable response in price.

In response to the newly-formed stockholders committee, L.N.E.R. preferred has rallied to 10¼ at the time of writing, and the deferred to 4⅞. L.N.E.R. second preference rallied to 33⅜ and was unchanged on balance; the first preference was 60½, compared with 61¼ a week ago. Great Western ordinary declined on balance from 62½ to 61¾; the 5 per cent. preference was fractionally better at 115½, and the guaranteed stock gained a further point to 127. L.M.S.R. ordinary was little changed on balance at 32¾, compared with 33, the 1923 preference 61½, compared with 62¼, and the senior preference 76, compared with 76¼. Southern deferred at 24 was fractionally lower on balance, and the preferred 77¼; the 5 per cent. preference improved to 114½. London Transport "C" eased from 67 to 66¾.

Argentine railway stocks reacted; the extension of the Central Argentine debenture moratorium, although expected, emphasised the difficult position of the British-owned railways in the Argentine. Later the tendency became firmer. Elsewhere, United of Havana debentures reacted to 33½. Leopoldina debentures were 55½xd. Antofagasta preference improved to 47. Canadian Pacifics were fractionally lower.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ending	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1941/2	No. of Weeks	Aggregate traffics to date: Totals 1942/3	Aggregate traffics to date: Totals 1941/2	Aggregate traffics to date: Increase or decrease	Shares or stock	Prices: Highest 1942	Prices: Lowest 1942	Prices: Nov. 26, 1943	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	21.11.43	26,700	+ 1,680	47	1,329,100	1,003,470	+ 325,630	Ord. Stk.	14	7⅜	13¾	Nil
	Argentine North Eastern ...	753	20.11.43	15,390	+ 2,196	21	292,716	283,920	+ 8,796	..	6½	3	7	Nil
	Bolivar	174	Oct., 1943	5,144	— 1,286	44	52,813	47,139	+ 5,674	6 p.c. Deb.	19½	10	21½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	20½	9	21	Nil
	Bue os Ayres & Pacific ...	2,807	20.11.43	102,900	+ 3,720	21	1,894,800	1,814,820	+ 79,980	Ord. Stk.	7½	4	6¾	Nil
	Buenos Ayres Great Southern	5,080	20.11.43	184,740	+ 22,620	21	3,136,080	2,854,140	+ 281,940	Ord. Stk.	12½	7⅛	14½	Nil
	Buenos Ayres Western ...	1,930	20.11.43	56,280	— 5,940	21	1,043,280	1,062,060	— 18,780	..	12¾	6	12½	Nil
	Central Argentine	3,700	20.11.43	152,514	+ 17,862	21	2,788,533	2,564,571	+ 223,962	..	9¼	4 1/16	8½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	3¾	2½	4	Nil
	Cent. Uruguay of M. Video	972	20.11.43	34,093	+ 9,418	21	648,586	452,963	+ 195,623	Ord. Stk.	8	4	6½	Nil
	Costa Rica	262	Oct., 1943	22,459	+ 9,328	17	94,493	51,375	+ 43,118	Stk.	16½	11	15	Nil
	Dorada	70	Oct., 1943	21,800	+ 2,330	43	218,607	157,175	+ 61,432	1 Mt. Db.	90½	89	95½	6⅜
	Entre Rios	808	20.11.43	19,584	+ 1,236	21	409,764	383,988	+ 25,776	Ord. Stk.	33	4½	7	Nil
	Great Western of Brazil ...	1,030	20.11.43	22,700	+ 3,500	47	766,600	528,600	+ 238,000	Ord. Sh.	9/-	9/-	29/9	Nil
	International of. Cl. Amer.	794	Oct., 1943	$511,566	+ $72,075	43	$6,023,847	$5,072,794	+ $951,053	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	1¼	5/3	2	Nil
	La Guaira & Caracas... ...	22½	Oct., 1943	6,900	— 1,670	44	83,360	71,925	+ 11,435	5 p.c. Deb.	11½	5	87§	Nil
	Leopoldina	1,918	20.11.43	39,688	+ 8,267	47	1,635,271	1,418,365	+ 216,906	Ord. Stk.	6¾	3½	6½	Nil
	Mexican	483	21.11.43	ps. 278,700	+ ps. 12,600	21	ps. 7,987,400	ps. 5,854,400	+ ps. 2,133,000	Ord. Stk.	1	½	1	Nil
	Midland Uruguay	319	Aug., 1943	14,706	+ 4,213	41	31,160	23,107	+ 8,053	—	—	—	—	—
	Nitrate	382	15.11.43	8,776	+ 728	46	137,471	172,058	— 34,587	Ord. Sh.	77/-	3½	72/6	Nil
	Paraguay Central	274	19.11.43	$5,385,000	+ $1,985,000	21	$109,166,000	$76,788,000	+ $32,378,000	Pr. Li. Stk.	53	40	70	8 1/16
	Peruvian Corporation ...	1,059	Oct., 1943	102,818	+ 17,072	18	417,026	336,988	+ 80,038	Pref.	19⅞	5½	12½	Nil
	Salvador	100	Sep., 1943	c 69,000	+ c 14,000	13	c 268,000	c 183,000	+ c 85,000	—	—	—	—	—
	San Paulo	153½	14.11.43	48,912	+ 12,579	46	2,012,536	1,700,511	+ 312,025	Ord. Stk.	59	41	58½	3 1/16
	Taltal	160	Oct., 1943	5,345	+ 2,165	17	22,250	19,840	+ 2,410	Ord. Sh.	41/-	23/-	27/6	Nil
	United of Havana	1,301	20.11.43	41,570	— 3,656	21	971,507	844,. 94	+ 127,213	Ord. Stk.,	8¼	2½	4½	Nil
	Uruguay Northern	73	Aug., 1943	1,451	+ 395	9	2,838	2,198	+ 640	—	—	—	—	—
Canada	Canadian Pacific	17,034	21.11.43	1,234,400	+ 181,800	47	52,149,200	45,030,600	+ 7,118,600	Ord. Stk.	16¾	9 7/16	14¾	Nil
India†	Barsi Light	202	Aug., 1943	15,285	+ 2,003	22	107,055	76,587	+ 30,468	—	—	—	—	—
	Bengal-Nagpur	3,267	Sep., 1943	988,425	+ 121,050	25	6,141,675	5,300,475	+ 841,200	Ord. Stk.	102¼	88	103½	3¾
	Madras & Southern Mahratta	2,939	30.9.43	284,700	+ 8,267	26	5,036,024	4,294,656	+ 741,368	..	105¼	87	108½	6 5/16
	South Indian	2,349	20.9.43	207,781	+ 66,283	24	3,491,129	3,028,490	+ 462,639	..	103¾	88⅞	104½	4 1/16
Various	Egyptian Delta	—	10.10.43	16,936	+ 3,447	29	274,860	211,096	+ 63,764	Prf. Sh.	5¼	1¼	3½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	44	35	43½	13 13/16
	Midland of W. Australia ...	277	Sep., 1943	31,269	+ 3,556	13	101,693	84,321	+ 17,372	Inc. Deb.	95	90	100	6
	Nigerian	1,900	28.8.43	80,062	+ 29,036	21	1,398,693	1,212,844	+ 185,849	—	—	—	—	—
	South Africa	13,291	2.10.43	851,417	+ 61,474	27	22,232,795	20,514,452	+ 1,718,343	—	—	—	—	—
	Victoria	4,774	May, 1943	1,432,673	+ 67,979	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ¼ Argentine traffics are given in sterling calculated @ 16⅜ pesos to the £
† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend